SEPTEMBER 22, 1952

IRON & STEEL SHOW ISSUE

STEEL

THE WEEKLY MAGAZINE OF METALWORKING

OHIO STATE UNIVERSITY
SEP 23 1952

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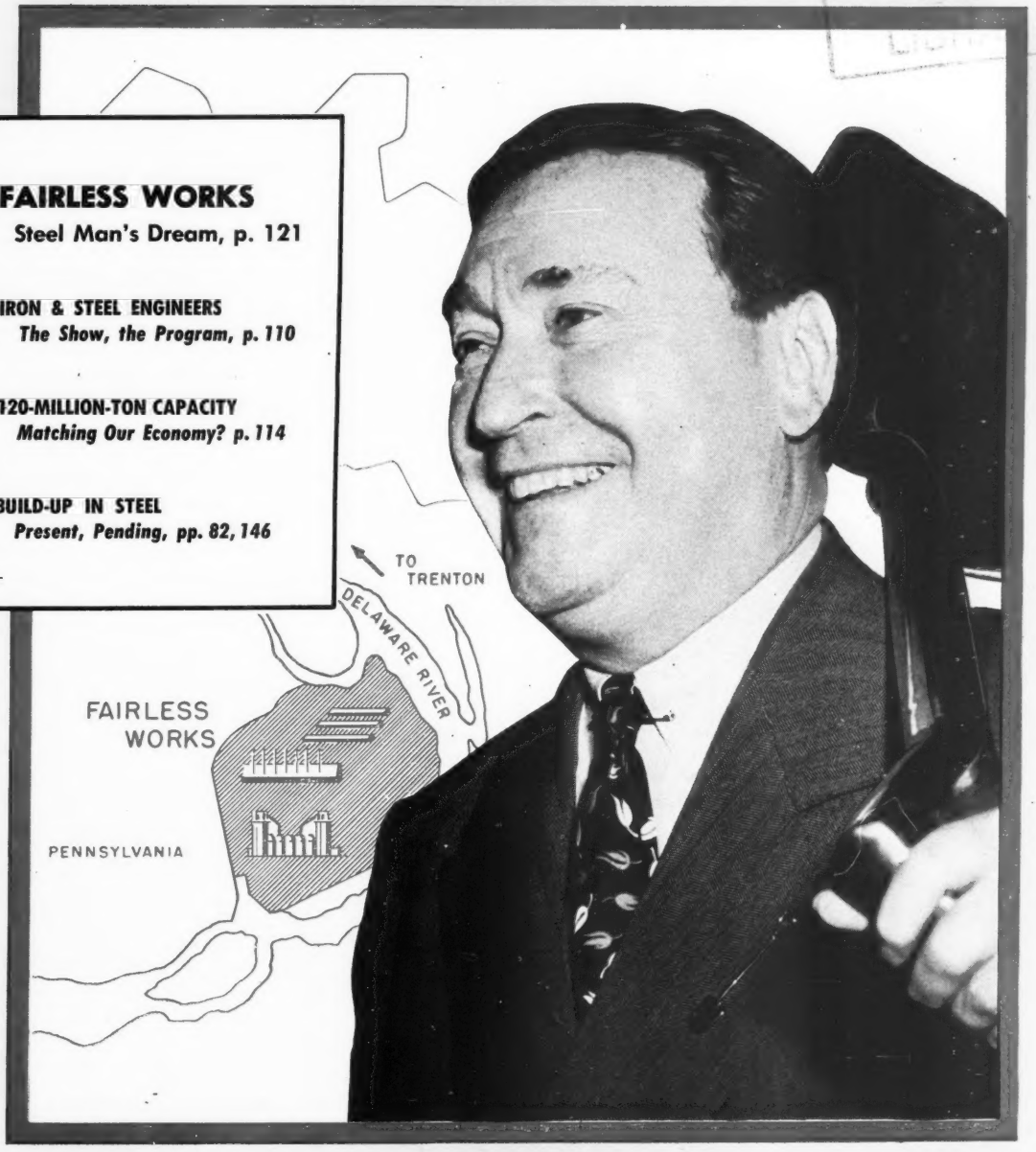

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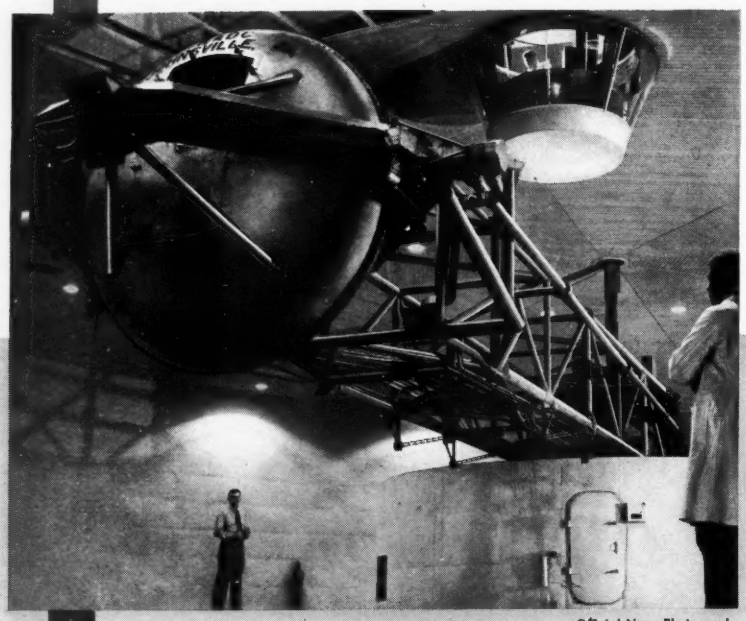

Official Navy Photograph

World's largest "Human Centrifuge," designed and built by McKiernan-Terry Corporation, Harrison, N. J., under direction of Special Devices Center, Office of Naval Research, Port Washington, Long Island, N. Y.

take a CLOSER LOOK at this

mighty arm of B&W TUBING

Recently completed at the U.S. Naval Air Development Center near Philadelphia, Pennsylvania, this odd-looking machine—the world's largest "human centrifuge"—is a notable advance in research to determine physiological effects of accelerative forces on pilots and instruments. It is capable of exerting on "human guinea pigs" up to 40 times the normal force of gravity. A man under test rides in the aluminum-plastic gondola at the end of a 50-foot arm fabricated from B&W Chrome-Moly Tubing of aircraft quality. To develop maximum gravitational pull, the total 4400-pound weight of loaded gondola and its supporting gimbal can be accelerated in a 100-foot diameter circle from a standstill to 174 miles an hour in less than seven seconds!

There could be no compromise in tubing quality and dependability for such rigorous service conditions. Selection of B&W Tubing for this unusually tough job means that you, too, should say B&W before you say *seamless* or *welded* mechanical tubing for any machining or fabricating requirement. Be sure to call on your nearest B&W Tube Representative any time you have a job for mechanical tubing for unusual or ordinary applications.

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TA-1701 M

HOW BOLTED STRUCTURAL JOINTS SPEED UP STEEL CONSTRUCTION

Use of Bethlehem High-Strength Steel Bolts to join structural members helps make steel erection proceed quietly at a smooth, rapid pace. This new method replaces field-driven rivets, with the hexagonal nuts being driven up quickly with power wrenches to form a secure joint. No change in shop work is required as the high-strength bolts do not require a driving fit.

In assembling Bethlehem High-Strength Bolts, a hardened washer is placed under both the head and the nut, to permit development of the high torque required without scoring the connected material. The nuts are driven up on the bolts so tightly that there is no possibility of slip at working loads.

Bethlehem High-Strength Bolts are made of carbon steel, and are heat-treated by quenching and tempering, to conform to the requirements of ASTM Specification A-325. They are manufactured at our Lebanon, Pa., Plant in a range of sizes so wide as to meet virtually every construction requirement.

Send for Helpful Booklet on High-Strength Bolting

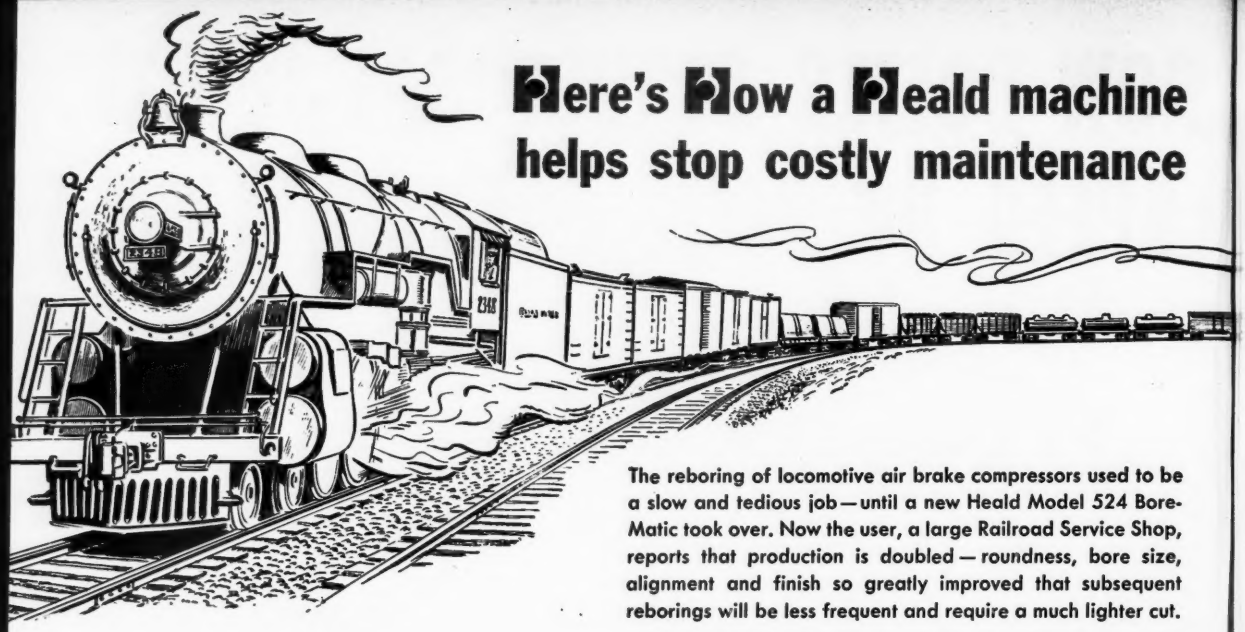
We have an interesting 8-page booklet, "High-Strength Bolting for Structural Joints." It's just off the press, and should answer all your questions about high-strength bolting. For your copy, write to us at Bethlehem, Pa.

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

Bethlehem supplies every type of Fastener



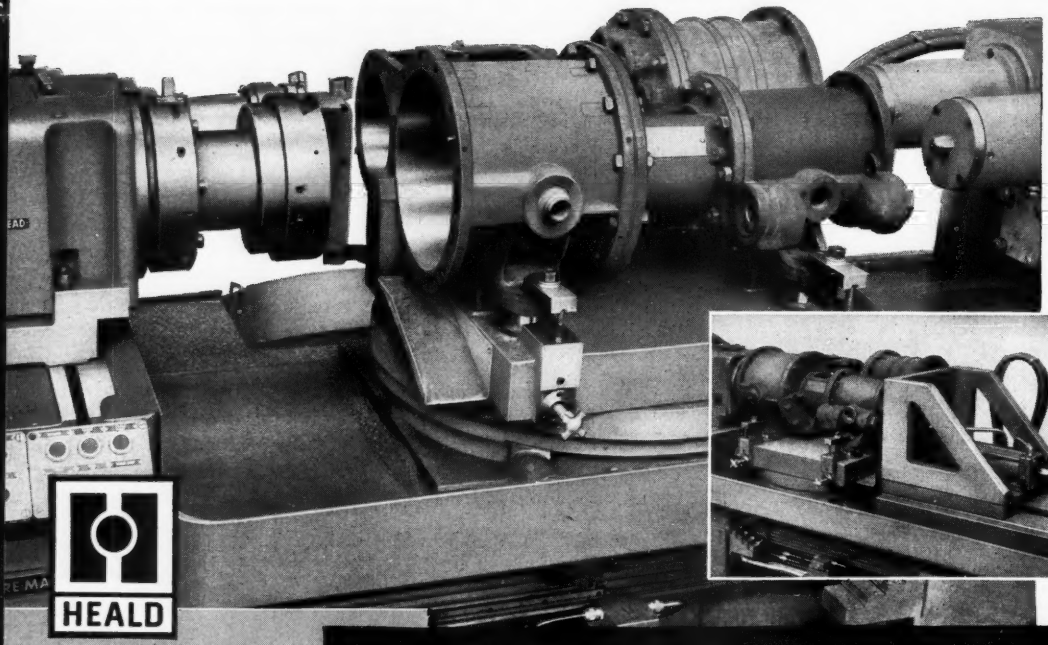
Here's How a Heald machine helps stop costly maintenance

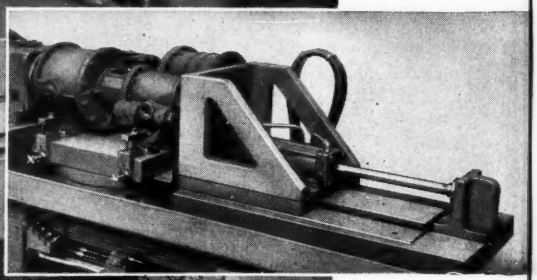
The reboring of locomotive air brake compressors used to be a slow and tedious job—until a new Heald Model 524 Bore-Matic took over. Now the user, a large Railroad Service Shop, reports that production is doubled—roundness, bore size, alignment and finish so greatly improved that subsequent reborings will be less frequent and require a much lighter cut.

One reason for this increased speed and accuracy is the 180° indexing fixture and unique locating arrangement shown below. An hydraulic tailstock locator picks up locations on rear of part and table moves to left to locate front of part on two locators *mounted on the boringheads*. Part is then locked and clamped and boringhead locators are replaced by tooling. After front end is borized, work is hydraulically indexed 180° for borizing the rear cylinders.

Remember — when it comes to precision finishing, it pays to come to Heald.

Locomotive air brake compressor cylinders rebored in half the time — with better accuracy, too — on a new Heald Bore-Matic





Left: Front of Model 524 Bore-Matic with compressor cylinders clamped in place on hydraulic platen type 180° indexing fixture.

Below: End view of same machine showing hydraulically operated tailstock locator.

HEALD

THE HEALD MACHINE COMPANY

Heald machines speed the nation's production

WORCESTER 6, MASSACHUSETTS

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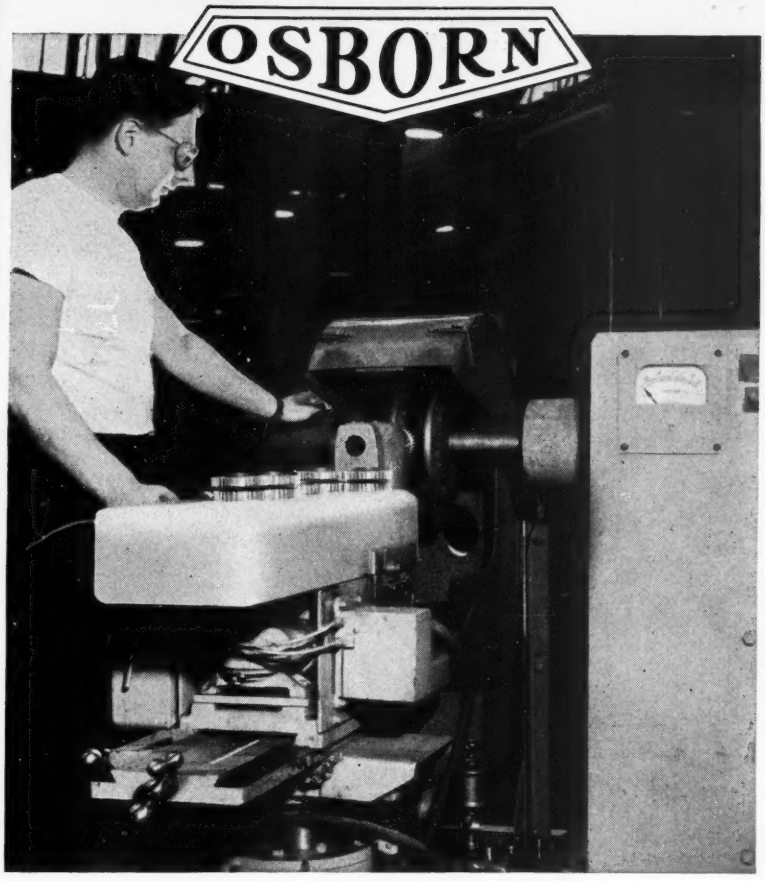


Formerly 20... now deburrs 125 per hour

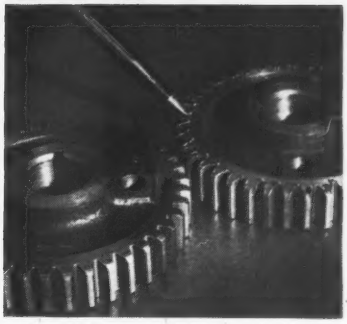
A new machine . . . the Osborn Work Holder Brushing Lathe . . . now deburrs gears and similar parts *at the push of a button!*

In the plant of Caterpillar Tractor Co., this automatic machine deburrs and finishes gear teeth *six times as fast* as the former hand method. Production now is 125 gears per hour. Output formerly was 20. Burrs and sharp edges are now removed uniformly. Every gear tooth has smooth, rounded edges and surfaces are blended.

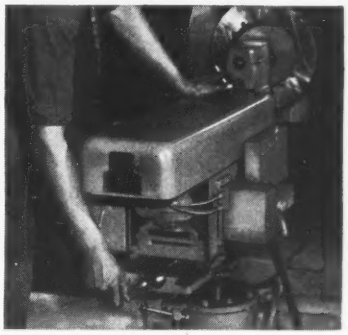
Find out how you can speed deburring and improve product quality with this versatile Osborn machine. Call your **O**sborn **B**rushing **A**nalyst today or write *The Osborn Manufacturing Company, Dept. 814, 5401 Hamilton Avenue, Cleveland 14, Ohio.*

Osborn Brushes

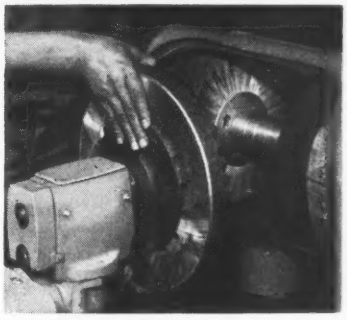
OSBORN POWER, MAINTENANCE AND PAINT BRUSHES AND FOUNDRY MOLDING MACHINES



RESULTS ARE UNIFORM. Burrs and sharp edges are removed uniformly. Every gear has smooth, uniform, rounded edges. Surfaces are blended. These gears were deburred on the machine shown at the left.



SET-UP IS SIMPLE. The machine is highly adaptable where production involves either large runs of a few parts or small runs of many different types and sizes of gears. Machine setups may be quickly made by unskilled operators. The complete brushing cycle is controlled automatically by the electronic timer which is set for any desired brushing interval to suit the size, shape or condition of part being brushed.



OPERATION IS SPEEDY. The operator mounts the gear easily and quickly. The gear advances to the face of two rotating Osborn brushes and the edge of the gear teeth makes contact with the brushes. To assure fast, positive action on each piece brushed, an automatic control reverses the direction of brush rotation on every cycle of operation. This machine deburrs 14-inch hypoid gears in 1½ minutes compared to 25 minutes for former method.

INVESTIGATE IT TODAY

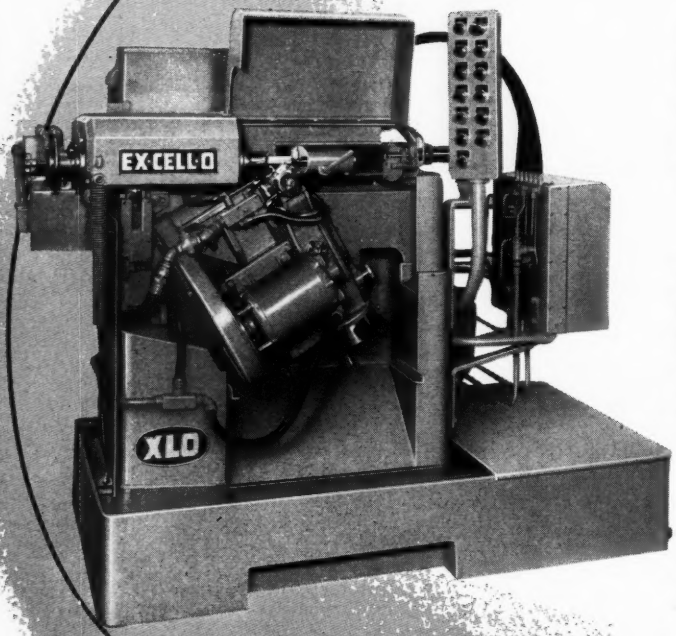
for *your* problems. Users report time savings ranging from 20% to 1570% with the Osborn Work Holder Brushing Lathe. Let us demonstrate what it can do for you!

FOR PRECISION IN VOLUME JET BLADE PRODUCTION . . .

EX-CELL-O

Air foil forms of jet compressor blades are speedily and accurately ground on the Ex-Cell-O Precision Profile Grinder.

MACHINE GRINDS COMPLETE AIRFOIL



Ex-Cell-O Style 87 Precision Profile Grinder

For *precision in volume jet blade production,* you'll want the complete "Ex-Cell-O Package" of jet blade finishing machines, including this Style 87 Precision Profile Grinder. Like the Style 85 Two-Wheel Form Grinder, the Style 86 Profile Miller and the Style 88 Profile Polisher, this machine is production-proved.

The complete airfoil form, including leading and trailing edges, is accurately and rapidly ground on the Style 87. All operations, except loading and unloading, are automatic. An important feature is the automatic control of the two-speed work drive motor which slows down while the broad areas of the airfoil are ground, speeds up for grinding the leading and trailing edges.

For further details on the Style 87 and other Ex-Cell-O jet blade finishing equipment write, wire, or phone Ex-Cell-O in Detroit today or contact your local Ex-Cell-O representative.

XLO
EX-CELL-O for PRECISION

EX-CELL-O CORPORATION

DETROIT 32, MICHIGAN

MANUFACTURERS OF PRECISION MACHINE TOOLS • CUTTING TOOLS
RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS • AIRCRAFT
AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

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This Week in Metalworking

STEEL

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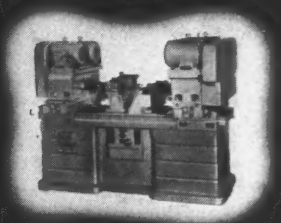
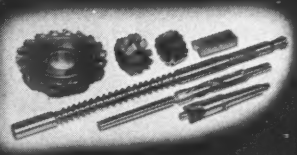


PRECISION MACHINE TOOLS



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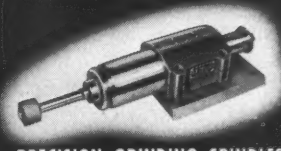
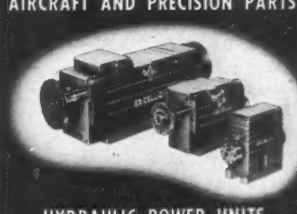


PRECISION GRINDING SPINDLES

DRILL JIG BUSHINGS

AIRCRAFT AND PRECISION PARTS



HYDRAULIC POWER UNITS

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Tinned stainless or carbon steel. In reels of 50 to 200 pounds. Stainless has high tensile strength, high resistance, low permeability.

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Tough, durable, workable. In the size and type for your work.

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Any shape* . . . high carbon . . . hard drawn . . . high tensile . . . stainless . . . galvanized . . . tinned . . . bright.

*Cross-sectional areas up to .250" square; widths to ⅜"; width-to-thickness ratio not exceeding 6 to 1.

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Behind the Scenes . . .

All Together

This week is a bonanza for those special "weeks" we have been keeping you informed about. All in the same period of seven days, we have Dog Week, Window Week, Business Women's Week and Sweater Week.

So, all you business women, attention: It's your duty sometime during the next few days to put on that sweater, take your dog out for a walk and do some window shopping. You can save time by doing it all at once.

Staff Additions

New and welcome addition to the list of STEEL editors is Bob Love, His dad is John Love, the Scripps-Howard syndicated columnist. He'll concentrate on the news end of the business, having had newspaper experience.

When he was being interviewed by Managing Editor Walt Campbell, he mentioned that while he liked the name Bob better, some people called him "Young Love."

Another newcomer is Dr. Allen G. Gray who comes as technical editor. He's been listed for some time on the masthead as a consulting editor.

Dr. Gray has an extensive background in metallurgical research and development including wartime work on the Manhattan Project (atomic bomb). He's editor of the forthcoming book, "Modern Electroplating."

Cover Stuff

This week's cover story is the first complete article ever published on the Fairless Works of United States Steel Co. It's complete with background stories, description of facilities and equipment and capacities. In short, it introduces you for the first time to this new mill—the only completely integrated steel mill to be built in the U. S. in one package.

Editor Irwin Such and Managing Editor Walt Campbell spent three days at Morrisville, in historic Bucks County, talking to all the top production and management men at the plant. They interviewed everybody from Al Berdis, general superintendent, to all the department superintendents. They took along an electronic recorder and recorded over 20 hours of interviews and from these assembled the story for the first time in a neat package.

The Editors toured the new plant from the high catwalks to the subterranean passages under the open hearths. As they walked they noted pictures they wanted for the article and these were taken and furnished by the Corporation.

Their guide for the tour was Frank O'Keefe, public relations man. Frank was expecting to become a father at any moment and had the plant security men alerted to notify him of any developments at home. Wherever the party walked or rode, guards would call out, "No word yet, Frank," or some such message to put his mind at relative ease.

All of the figures involved in the Fairless Works are big. Walt Campbell says that as he walked around the plant he was continually awed by the size and the scope of the operation. At the same time he was puzzled by the government inability to see the absolute necessity for big business operations which give the consumer $.35 razors, $300.00 refrigerators and $2000.00 automobiles.

The story East of here tells about both the big and little business affected by this plant which represents a $75,000 investment for every employee who will work there.

Puzzle Corner

Answer to the puzzle in the Sept. 8 issue is positions 4, 10, 15, 20, 26 and 30. First in with that one were: George W. Frederick, Republic Steel Corp., Ralph E. Arnold, Fort Pitt Bridge Wks., Chas. J. Luhn, Jos. Honhorst Co., Harry Gertsen, United States Steel Corp. and L. D. Rice, Timken Roller Bearing Co.

Here's this week's. The 13 cards of a suit are arranged in a pile, faces down, so that if alternate cards, starting with the first, are exposed, the cards will appear in numerical order. The second, fourth, etc., are placed on the bottom of the pack. How are the cards arranged?

Shrdlu

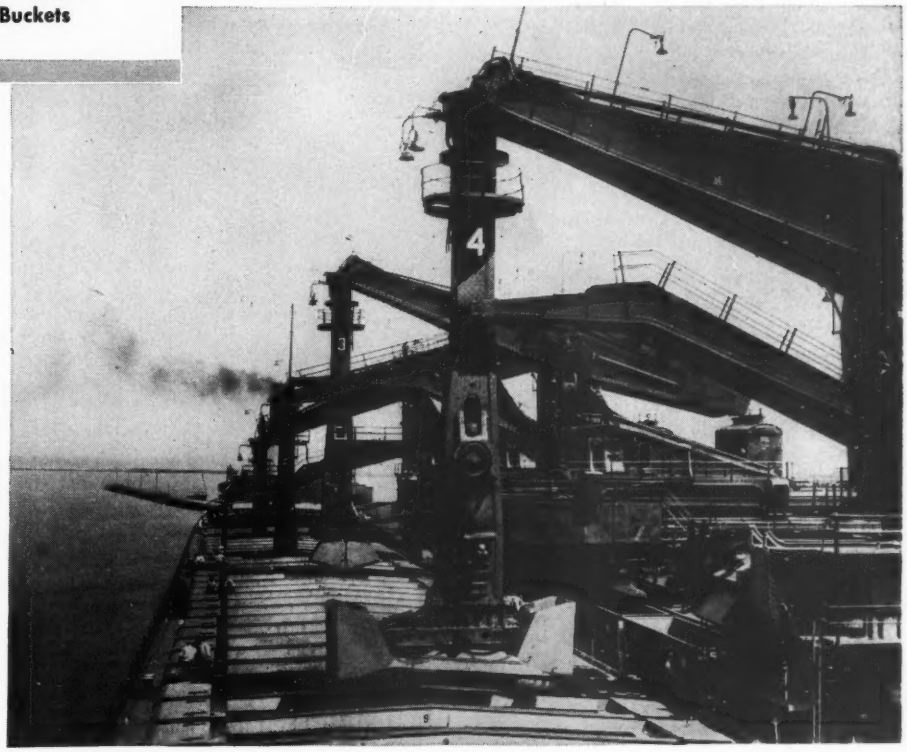
(Metalworking Outlook—Page 73)

Wellman will build it

Special Cranes
Ore Unloaders
Charging Machines
Forging Manipulators
Car Dumpers
Gas Flue Systems
Gas Reversing Valves
Coke Pushers
Mine Hoists
Skip Hoists
Ore and Coal Bridges
Clamshell Buckets

Exclusive Wellman Hulett-Type ore unloaders

handle most of lake-shipped ore



Four of an installation of five Wellman Hulett-Type unloaders in use at one of the largest ore docks on the Great Lakes.

• Wellman Hulett-Type unloaders handle by far the most of all lake-shipped ore. Their speedy, dependable performance contributes much to the economy of the modern ore dock. They are a product of Wellman's more than half-century of engineering experience and achievement.

THE WELLMAN ENGINEERING COMPANY

7000 CENTRAL AVENUE • CLEVELAND 4, OHIO

LANDIS WAYNESBORO **THREAD ENGINEERING DEVELOPMENTS** MACHINE CO. PENNSYLVANIA • U.S.A.

Landmaco Machine Threads Bell-shaped Gas Cylinder Collars

HARRISBURG Steel Corporation was interested in securing a more productive and economical means for threading stamped steel gas cylinder collars. Their threading problem arose mainly from the unusual bell shape of the workpiece (Fig. #1), which made chucking difficult.

To solve their problem a 1½" LANDMACO Threading Machine was furnished equipped with a special work holding fixture. The fixture (Fig. #2) is bolted to both vise jaws and thus rendering the vise jaws immovable, achieving the desired results of a solid carriage front. The gas cylinder collars are slipped over the arbor of the fixture and abutted against the circular abutting plate. Three semi-round drive keys, which fit into pressed key ways in the bore of the workpiece, prevent it from rotating on the arbor while under cut.

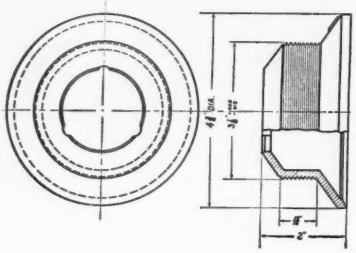


FIG. 1

The die head supplied with this machine was a 1¼" Lanco Internal Trip Heat Treated Head. (Fig. #3) Special Oversize chaser holders were provided for cutting a 3⅛" diameter, 11 pitch, U.N. form thread 15/16" in length. Internal tripping, by which the workpiece opens the die head, assures the same thread length on each collar regardless of their variance in height. It also prevents any possibility of chaser breakage or die head damage by running the workpiece too far into the die head while threading. The bell shaped design of the trip bar facilitates the alignment and holding of the collar on the work holding fixture while under cut.

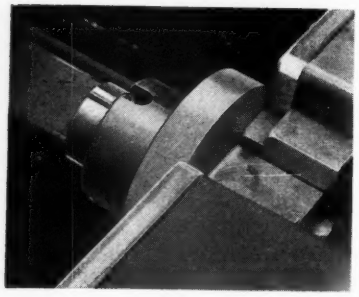
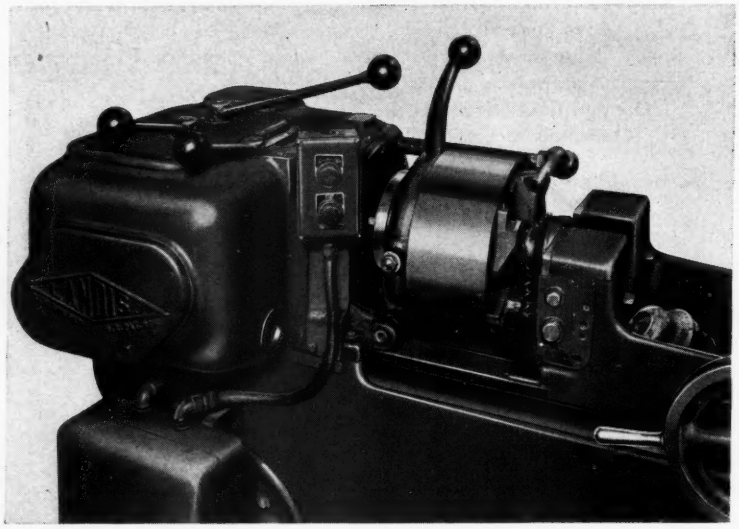


FIG. 2



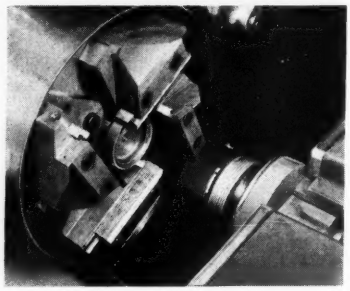


FIG. 3

Although special oversize chaser holders were furnished for this threading job, the chasers used in these holders were standard 11 pitch, U.N. form chasers. These chasers were supplied from our large chaser inventory and can be replaced immediately when the need arises. Usage of these chasers is not restricted to the diameter for which they were provided. They may be used for any diameter within the range of the die head by using proper chaser holders and if the thread form and pitch remain constant.

Now in operation at Harrisburg Steel, this machine has increased production and reduced threading cost on gas cylinder collars to their complete satisfaction. This is but one example of the many special work holding fixtures designed by Landis which enable the production of quality threads on unusual workpieces.

LANDIS REG. U.S. PAT. OFF. TRADE MARK

LANDIS *Machine* COMPANY
WAYNESBORO • PENNSYLVANIA • U. S. A.
338

Could there ever be any substitute for this?

Hear that splendid brazen blare that lifts the heart! See those sun-sparks flash from the bells of the instruments! Here comes the Brass Band, folks . . . stand back and clear the line of march!

Yes, it's Brass that makes the band unbeatable. And that goes for more different types of products than you can name . . . aircraft, automobiles, appliances, hardware, jewelry, machinery, electronics, fashion merchandise (and what have *you?*) . . . there's an endless list of products in which there's *no substitute* for the job performed by Brass. Because Brass is not only the special preference of production people, for its easy machinability and wide adaptability. It's the buy-word of countless customers who know its unmatched qualities of endurance, appearance, and resistance to corrosion.

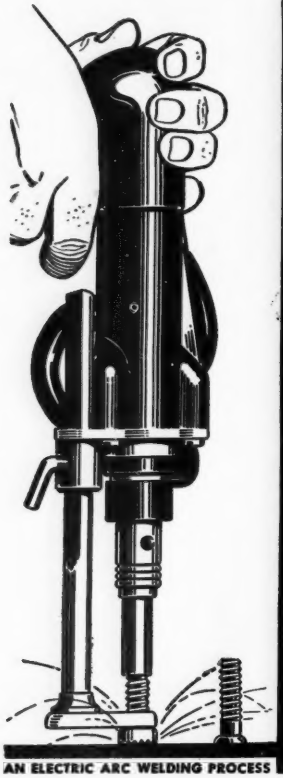
What's more, Brass is *not short.* The only thing short is the sightedness of those who tried "substitutes." So stay on the Brass standard of quality. And let's hear from you, *now,* about anything you need in the way of Brass sheet, rod, and wire.

. . .

The BRISTOL BRASS CORPORATION, makers of Brass since 1850 in Bristol, Conn. Offices or warehouses in Boston, Chicago, Cleveland, Dayton, Detroit, Los Angeles, Milwaukee, New York, Philadelphia, Pittsburgh, Providence, Rochester.

"Bristol-Fashion" means **Brass at its Best**

BIG SAVINGS LIKE THIS...



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DRILLING, TAPPING AND BOSSES ELIMINATED

...A superior switchgear product plus 20 per cent reduction in its selling price, resulted from Nelwelding, according to a leading manufacturer.

MANUAL ARC WELDING ELIMINATED

...Elimination of a manufacturing bottleneck by using the Nelweld method enabled a boiler company to boost production 25 per cent.

MATERIAL HANDLING GREATLY REDUCED

...By taking the tool to the work, Nelweld not only reduced material handling costs but cut fastening time on large coal pulverizers from 8 hours to approximately 53 minutes.

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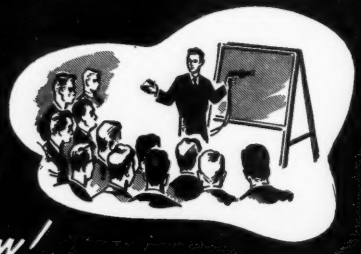
...Man-hours saved by Nelwelding in making refrigerator cars enables a leading car shop to increase productivity one car per day.

...OFTEN STEM FROM A NELWELD FASTENING CLINIC

• The Nelweld clinic can show you—right in your own plant how you can benefit from this modern fastening method.



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NELSON STUD WELDING

DIVISION OF GREGORY INDUSTRIES, INC., LORAIN, OHIO

LETTERS
TO THE EDITORS

Story That's Important

I read with interest the article in your Sept. 1 issue by R. S. Livingstone, "20 Questions: A Case Study in Human Engineering" (p. 55).

Mr. Livingstone makes the point that one of the most important avenues of communication between management and employees is through a supervisory organization that is kept fully informed by top management of the company's goals and developments. This information, of course, is to be passed down to the various levels by the supervisors.

This recommendation develops a question within our company of approximate-

ly 260 employees where we hold a monthly meeting of supervisors and foremen to accomplish the same objectives as pointed out by Mr. Livingstone. In our case, though, several of the foremen in this group belong to different labor unions. Would the fact that several of these employees are union men make any difference in conducting these meetings, or should all members be nonunion?

We here can think of no reason why our setup would not be workable, but we would appreciate any comments that Mr. Livingstone would care to make.

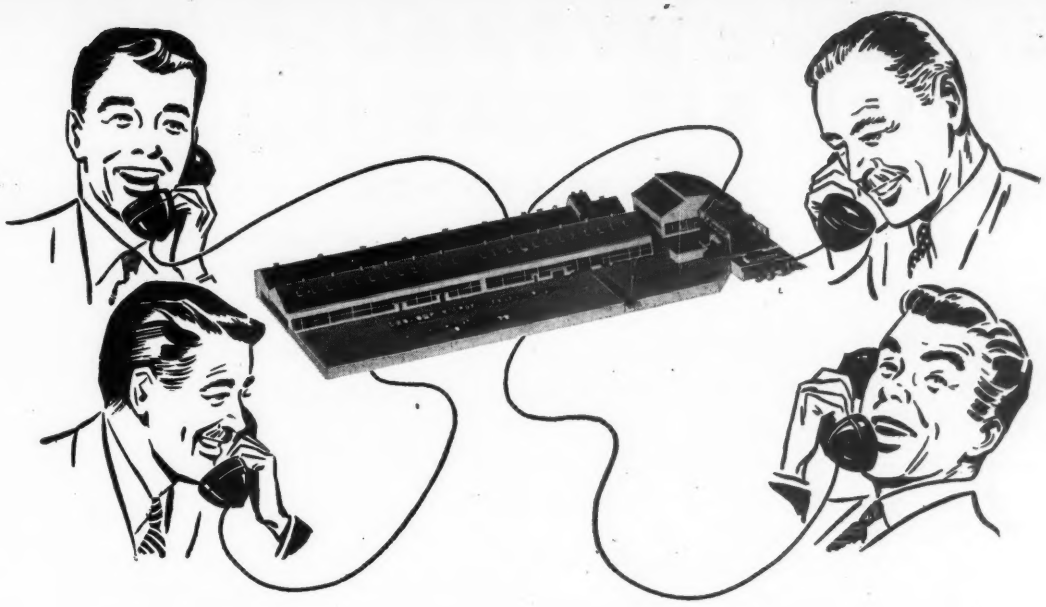
C. H. Smith
secretary
L. J. Wing Mfg. Co.
Linden, N. J.

• *Mr. Livingstone's comment: "I agree with Mr. Smith. After all, what you're trying to do is give full and truthful information to the supervisory organization so that they can pass the word along to the men working for them. The fact that certain members of the supervisory organization belong to a union shouldn't interfere or affect the process in any way. It's the story that's important, not organizations that the supervisors may or may not belong to. It's the story that's important."—ED.*

Conservation Tips to Ordnance

Your article "Strategic Elements: Emphasis Is on Conservation" (Sept. 1, p. 82) covered a field with which this office is concerned. In order to bring its contents to the attention of as many Ordnance materials and design engineers as possible, permission is requested to re-

Continued on following page



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- to DRY large quantities of fresh air from outdoors

The Niagara's Controlled Humidity Method using HYGROL moisture-absorbent liquid is

Best and most effective because . . . it removes moisture as a separate function from cooling or heating and so gives a precise result constantly and always. Niagara machines using liquid contact means of drying air have given over 20 years of service.

Most reliable because . . . the absorbent is continuously reconcentrated automatically. No moisture-sensitive instruments are required to control your conditions.

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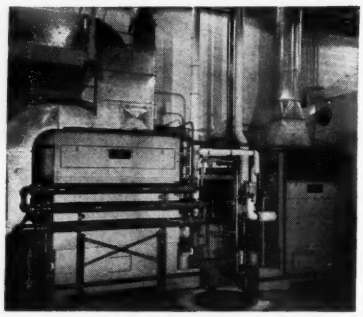
The cleanest because . . . no solids, salts or solutions of solids are used and there are no corrosive or reactive substances.



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Dept. S, 405 Lexington Ave., New York 17, N. Y.

District Engineers in Principal Cities of United States and Canada

LETTERS

Concluded from preceding page

produce this article for further circulation within the Ordnance Corps.

R. W. White
assistant for the Chief of Ordnance
Department of the Army
Washington 25

• *Permission granted.—ED.*

CCl_4 Has Proven Value

We've had an exchange of correspondence with Carl F. Stissel of Alexander & Alexander Inc., whose paper was digested in STEEL under the title, "Coke Plants Explosion Proofed," (July 7, p. 103).

Mr. Stissel's attention was called to the implication in the condensation that methyl bromide fire extinguishing fluid was less toxic than carbon tetrachloride and that current developments with the former product might solve that particular problem.

Mr. Stissel states that this was an error of the condensation and was not the point of his original paper. Actually, methyl bromide is of a much higher order of toxicity than carbon tetrachloride and has never been approved for portable fire extinguisher use by any public or private agency, whereas the vaporizing liquid extinguishers using carbon tetrachloride are approved and their use encouraged by all such bodies.

From tests conducted by the Bureau of Mines and from the most recent tests of carbon tetrachloride toxicity as reported by the American Medical Association, it is apparent that exposures to the concentrations of carbon tetrachloride developed from fire extinguisher use and for the period of time required to use an extinguisher do not produce any detectable adverse effects on test subjects.

Robert Nathans
director
Research Institute Inc.
New York

Guide's Just the Thing

We are regular readers of STEEL. Thought perhaps you could help us with this problem:

Where can we obtain a list of the steel producers who make hot-rolled sheets or strip, indicating the width capacity? We are chiefly interested in the names and addresses of those rolling above 20 inches in width and in gauges from 10 to 14 inclusive.

J. P. Riblet
Crawford Metal Craftsmen Inc.
Galion, O.

• *The data you want were published in the "Guide for Steel Buyers" which appeared as a special report in the Jan. 15, 1951,* STEEL.*—ED.*

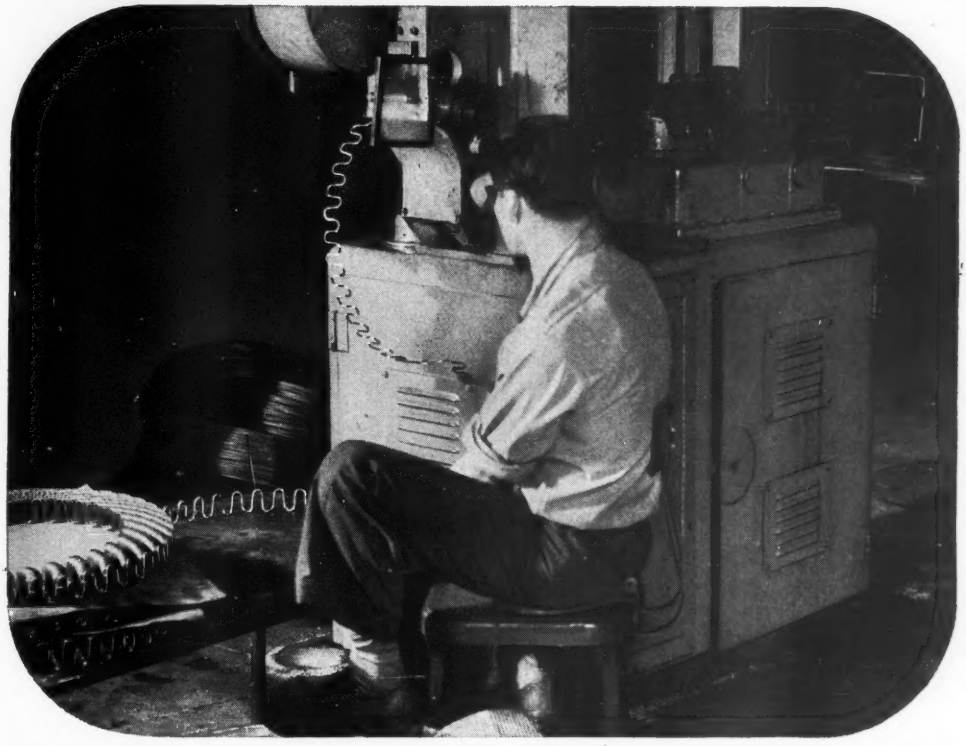
Where Are the Steel Plants?

Do you have a list of all of the steel plants in the country, showing them by name and address as well as some evidence of size, such as number of employees?

J. G. Crost
Sunroc Co.
Glen Riddle, Pa.

• *These are available in* STEEL*'s "Steel Industry Statistics," a reprint of which has been forwarded.—ED.*

SPRING WIRE



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If you are interested in showing this film, write to the Advertising Department of Heyl & Patterson, giving the name and address of your organization, and the date on which you wish to show the film. There is no charge, of course, other than postage.

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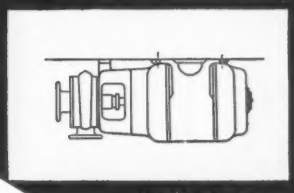
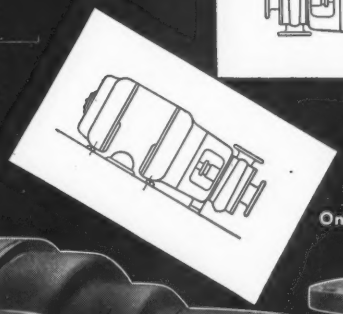


Upside down



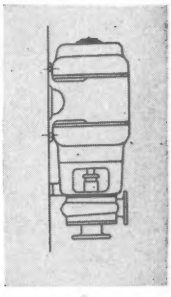
On an angle

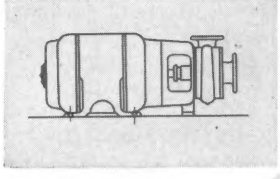
If plant expansion pains have you squeezed for floor space, Fairbanks-Morse *Builtogether* Centrifugal Pumps can help solve your problems.

These compact, efficient pumps can be mounted horizontally, vertically, or on an angle . . . on the floor or from the ceiling. Backed by the Fairbanks-Morse reputation for quality, these pumps will always deliver outstandingly dependable performance. An important extra advantage to you is the fact that both motor and pump are built by Fairbanks-Morse . . . your assurance of efficient service.

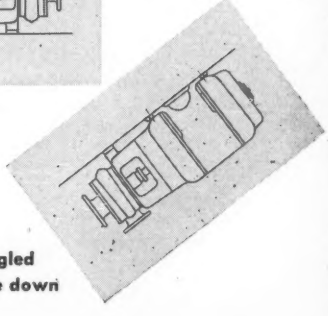
Fairbanks-Morse Builtogether Pumps are available in both single and two-stage models . . . in capacities up to 1000 gallons per minute against heads up to 550 feet. For complete information, see your local Fairbanks-Morse Branch, or write Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.

Vertically





Horizontally



Angled upside down

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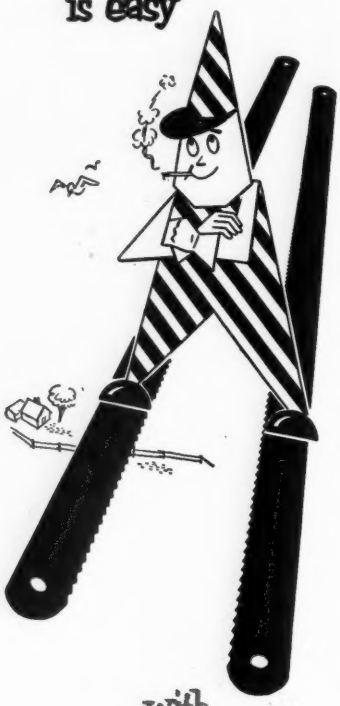

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For cutting time while cutting metal, nothing has ever beaten STAR hacksaw blades, frames, and metal-cutting band saw blades.

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The bundle of sticks

A wise old man called his quarrelsome sons about him. Taking up a bundle of sticks, he commanded each in turn to break the sticks. All tried, but in vain, and said it could not be done.

"And yet, my boys, nothing is easier to do," said the father, as he undid the bundle and broke the sticks, one by one. "By this example, you can see that united you will be more than a match for your enemies; but if you quarrel and separate, your weakness will put you at the mercy of those who attack you."

The useful truth of this fable is just as timely today as it was when the Greek ex-slave Aesop told it 2,500 years ago. You, a patriot, believing in individual liberty and freedom for all, see our American way of life threatened by the menace of communism abroad and jeopardized at home by complacence, negligence, confusion and incompetence.

As a business leader in your own community, you have a particular responsibility to help unify your fellow citizens and guide their thinking and action--for the strengthening and preservation of the ideals that built America, in fact, made America the envy and goal of the very individuals now seeking to destroy it. *In Union there is Strength.*

QUALITY YOUNGSTOWN SERVICE

The Youngstown Sheet and Tube Company

General Offices--Youngstown 1, Ohio
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MANUFACTURERS OF CARBON ALLOY AND YOLOY STEELS

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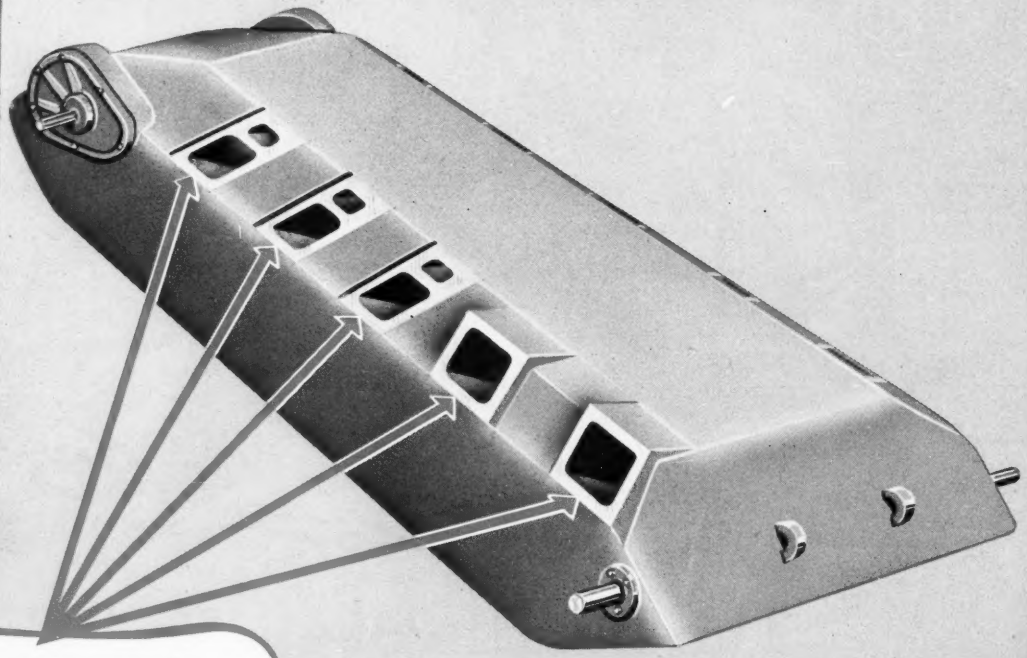
Problem...

HOW TO GRIND TANK HULL SUSPENSION MOUNTING PADS AT PRODUCTION SPEEDS . . .



Hard-to-get-to suspension mounting pads that had to be precision machined. The tough armor plate resisted existing methods.

PROBLEM . . .

Machining mounting surfaces for suspension assemblies on the underside of tank hulls consumed so much time that it slowed production throughout a vast tank plant. The machining had to be done on an angular surface on tough armor plate. It had to be extremely accurate. Each hull required ten separate setups, these done one at a time on a horizontal boring mill.

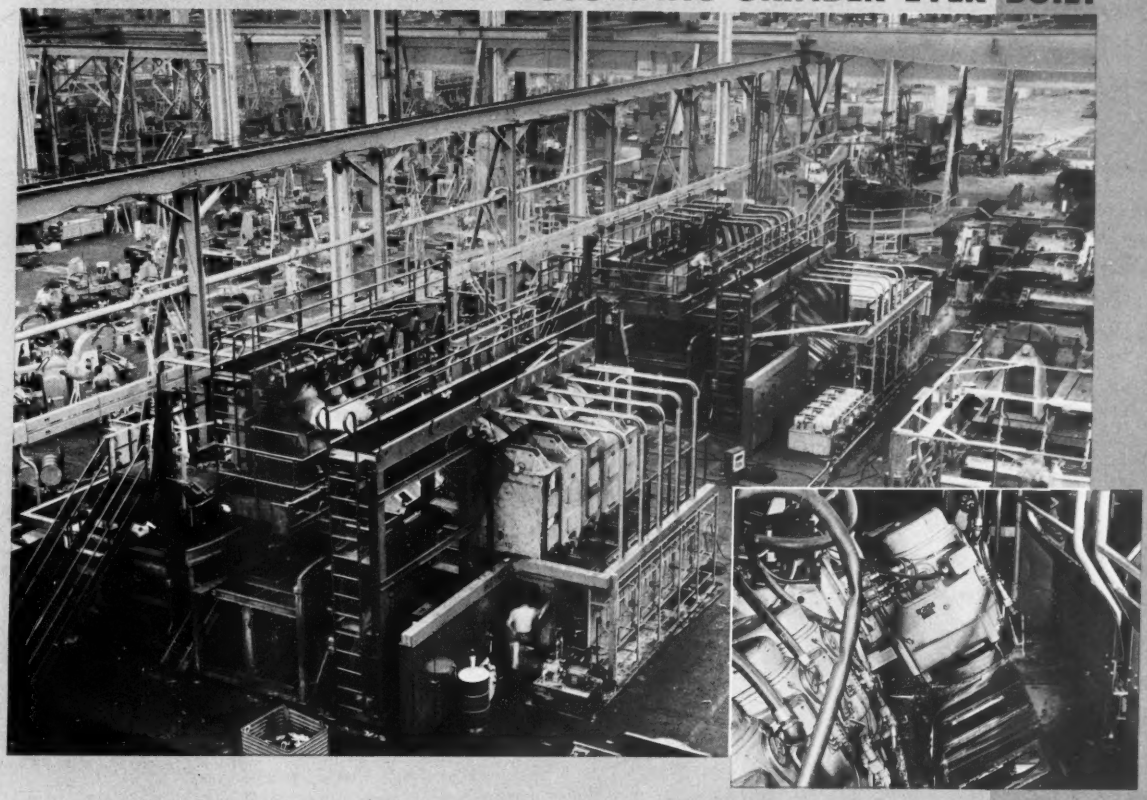
To iron out the bottle neck meant either one of two things. The company could add boring mills, or devise a machine to do the job. Adding mills would require a great deal of added space, the training of more operators, and a multiplication of the problems encountered in using a machine for a job for which it was not exactly suited.

SOLUTION . . .

The manufacturers contacted the Wean Equipment Corporation and outlined their problem. Wean set to work. Within a few months they had engineered a grinding machine that did the job 22 times faster than the old method. It is the largest multiple head grinding machine ever devised, and the first completely automatic adaption of a bank of grind-

Solution...

LARGEST MULTIPLE HEAD AUTOMATIC GRINDER EVER BUILT



ing heads to work on an angular surface. Weighing 350 tons, the Wean Grinding Machine grinds all ten surfaces simultaneously, and eliminates the possibility of human error in controlling the grinding head. Each of the 10 grinding heads is independently controlled and completely automatic. As the head moves back and forth across the surface of the mounting pad the depth of grind automatically increases with each pass. When the required depth is reached, the circular motion of the abrasive wheel stops and the grinding head withdraws. Automatic wheel dressing or cleaning removes all built up residue on wheel surface.

The intricate control system contains 15 miles of electric wire, hundreds of feet of pipe and 60,000 electrical connections, yet an operator can be trained to operate the machine in a single day.

THE ANSWER IS RESULTS . . .

The manufacturer, anticipating even greater production, has ordered a second grinding machine.

Getting results — finding the answers to the tough problems is why the Wean Equipment Corporation is a recognized leader in the field of special machinery for industry.

MACHINERY TODAY IS THE BUSINESS OF THE

EQUIPMENT CORPORATION

Wean

Cleveland, Ohio

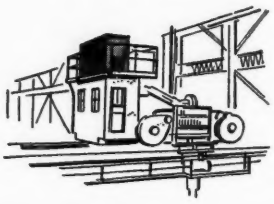
only at **DRAVO** can you get . . .

a **COMPLETE LINE** of

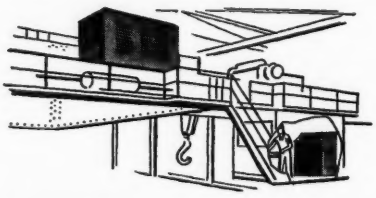
CRANE CAB COOLERS AND CONDITIONERS

No matter what radical temperature variations or atmospheric conditions occur in your industry, there's a Dravo Crane Cab Cooler or Conditioner available to protect your crane cab operator, safeguard his health, increase his efficiency and alertness and improve safety and production records in your operations.

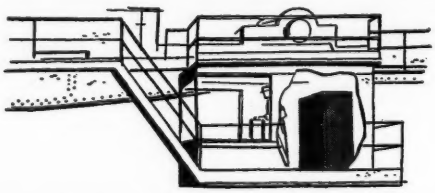
Dravo Crane Cab Coolers and Conditioners provide complete air conditioning, filter the air, remove dusts, dirt and fumes; heat the cab in winter, cool it in summer and provide constant ventilation the year around.



SELF-CONTAINED COOLERS—mounted alongside the cab or on the cab roof. Only electrical leads and connections required. Thermostat control—fully automatic—maintains 85° F. temperature with ambient temperatures up to 175° F. Ideal for "hot spots" in steel and other metal-working industries.



SPLIT-TYPE COOLERS—installed on the crane in two sections—the heavy condenser unit *on the crane* wherever you want it—the light cooling section *in the cab* with the operator. Two sections joined only with refrigerant pipe and electrical connections.



SMALL HEATERS AND VENTILATORS—especially designed to filter dusts and dirt, remove fumes, provide constant ventilation, supply heat in winter. Ideal for cranes in quarrying, slag, cement and similar industries.

One Source of Supply— Easy Installation

Dravo is your *one source of supply* for all crane cab coolers and conditioners. Units are quickly and easily installed with a minimum of downtime required. Parts are interchangeable on all units.

Available for Immediate Delivery

No delays in getting the units you want. For more information write for a complete catalog—or phone your nearest Dravo sales office and have our representative call on you.

DRAVO

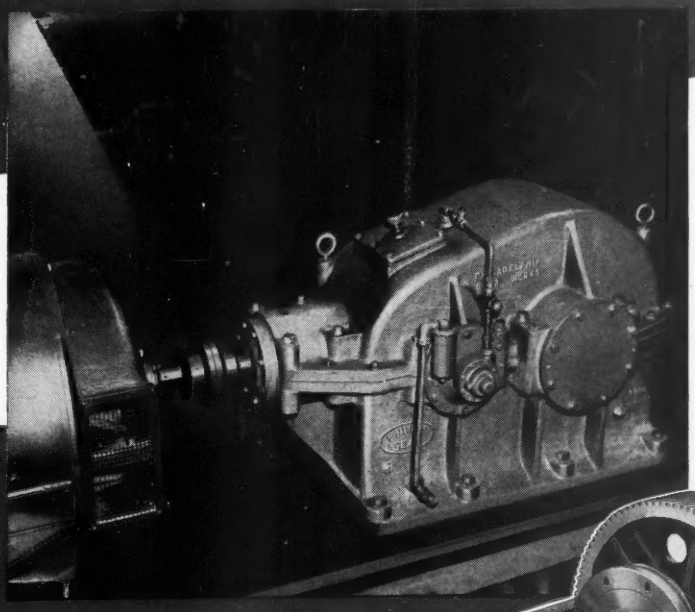
DRAVO

CORPORATION

606 Dravo Building, Fifth and Liberty Avenues, Pittsburgh 22, Pa.

ATLANTA • BOSTON • CHICAGO • CLEVELAND • DETROIT • NEW YORK • PHILADELPHIA • PITTSBURGH

What features do you want in a right angle drive ?



- ☒ HIGH EFFICIENCY
- ☒ ECONOMICAL OPERATION
- ☒ COMPACT CONSTRUCTION
- ☒ QUIET RUNNING
- ☒ LONG SERVICE LIFE
- ☒ LOW MAINTENANCE

Get them all in a PHILADELPHIA SPIRAL BEVEL-HELICAL Speed Reducing Unit

The upper photo shows a Philadelphia Spiral Bevel-Helical Reducer driving a heavy duty slitter at Scovill Manufacturing Company.

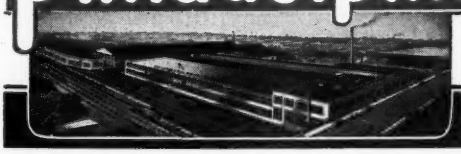
For smooth, dependable transmission of power at right angles Philadelphia Spiral Bevel-Helical Reducers are in a class by themselves. Designed and built by an established leader in the manufacture of power transmission equipment, these units are made to most exacting quality standards. Every part, from housings to bearings is manufactured from selected materials and produced on modern machinery.

Both horizontal and vertical units are available in single, double and triple reduction types. Standard ratios range from 1 to 1 up to 238 to 1. Operating efficiencies are as high as 98%.

get our catalog

Complete construction details are in our catalog SB-50. Write for a copy on your business letterhead.

Philadelphia Gear Works, INC.



ERIE AVE. AND G ST., PHILADELPHIA 34, PA.
NEW YORK • PITTSBURGH • CHICAGO • HOUSTON • LYNCHBURG, VA.

Industrial Gears and Speed Reducers
LimiTorque Valve Controls

"It all adds up to this:

MORSE ELECTROLIZED

are the least expensive tools you can buy!"

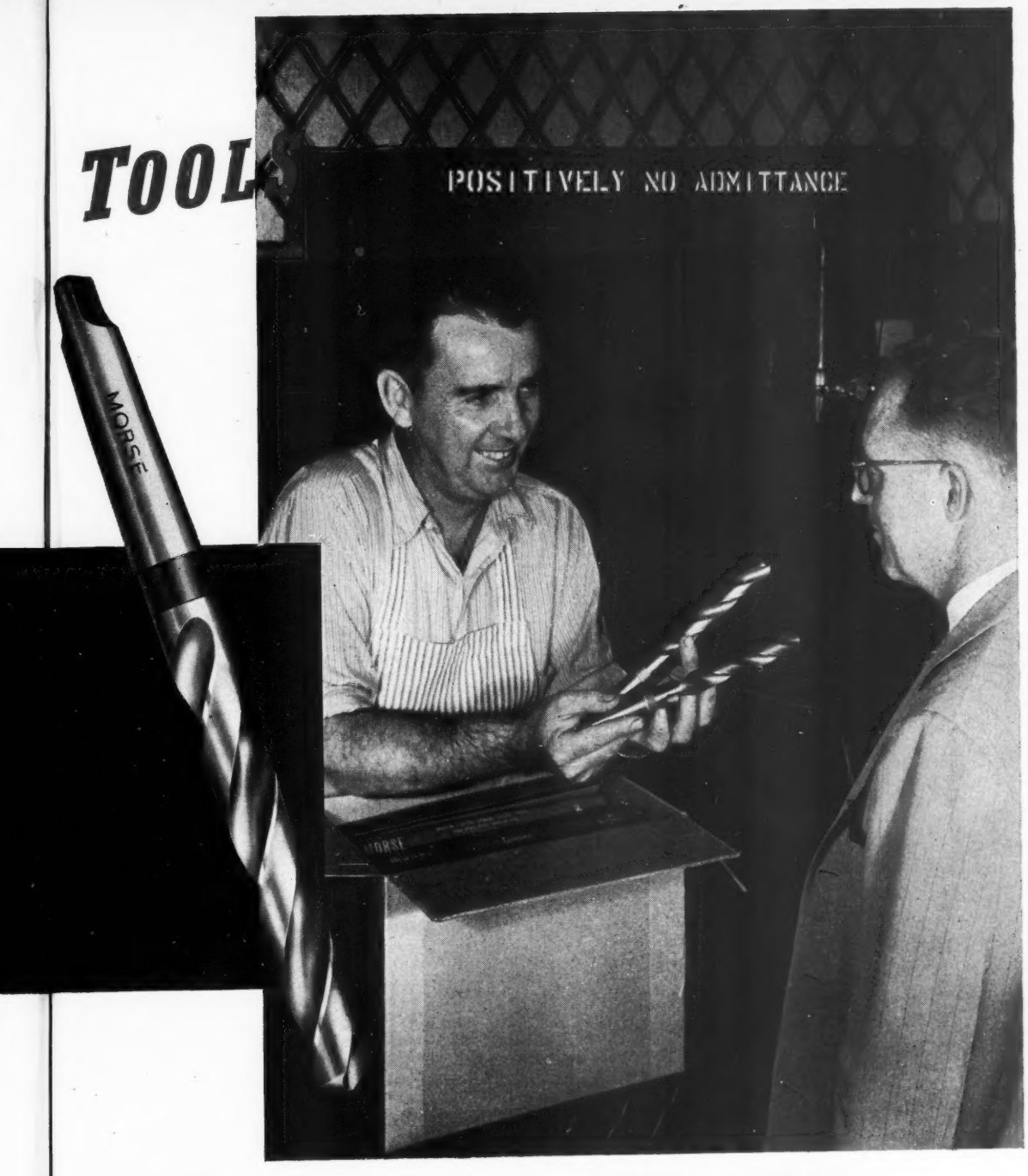
The tool-crib boss never loses a chance to remind the works manager that: "Every new shipment of Morse Cutting Tools that comes into the plant *pays another bonus in plus-production!*"

That's right. For what Morse Tools *really* cut are *costs* . . . by cutting cleaner and faster . . . by staying on the job longer. And then, of course, to go even further and get the unmatched maximum in tool-life, *specify* Morse Electrolized Tools.

Whatever you need, in standard or special-purpose tools contact your Morse-Franchised Distributor. He'll work out the exact specifications that will give you top performance *on your particular job,* at lowest cost. He has the know-how and the assistance of Morse Engineers to solve any tooling problem.

MORSE TWIST DRILL & MACHINE COMPANY
NEW BEDFORD, MASS.
(Division of VAN NORMAN CO.)
Warehouses in New York, Chicago, Detroit, Houston, San Francisco

TOOL



MORSE

Cutting Tools

...buy them by phone from your Morse-Franchised Distributor and save ordering time

POWDER-WASHING SPEEDS CLEAN-UP

Removes excess and defective metal quickly, easily, and at low cost

Cleaning-floor bottlenecks eliminated, production up, costs down, scraps and recasts negligible—that's the gist of enthusiastic reports on LINDE's powder-washing process.

Powder-washing combines the quiet speed of oxygen-cutting with a surface quality comparable to finish grinding. It removes fins, pads, sand inclusions, penetrations, burned core sand, chill bars, nails, chaplets, cracks and tears. It finishes flat or uneven surfaces to close tolerances with equal ease. And the powder-washing flame gets into places where other equipment can't.

Powder-washing can be applied to any carbon or alloy-steel casting. Equipment is simple. Technique is easily mastered in a short time.

For further details, telephone or write today. LINDE AIR PRODUCTS COMPANY, a Division of Union Carbide and Carbon Corporation, 30 East 42nd Street, New York 17, N. Y. In Canada: Dominion Oxygen Company, Limited, Toronto.

WHAT DO FOUNDRYMEN SAY ABOUT POWDER-WASHING?

"... powder-washing does for us in two hours what required one day of chipping."

*

"An hour of powder-washing has replaced four to six hours of grinding."

*

"Increased production and reduced labor and overhead more than make up for the cost of gases and powder consumed."

*

"... the equivalent of four days' chipping in one and one-half hours."

*

"... a casting which formerly required one hour of grinding is cleaned by powder-washing in less than five minutes."

*

"Powder-washing cleaned one casting in an hour, the other in 30 minutes. Conditioning by chipping and grinding would have taken three and two days respectively."

*

"... removed the shifted cores and penetrations with a saving of several hundred man hours."

*

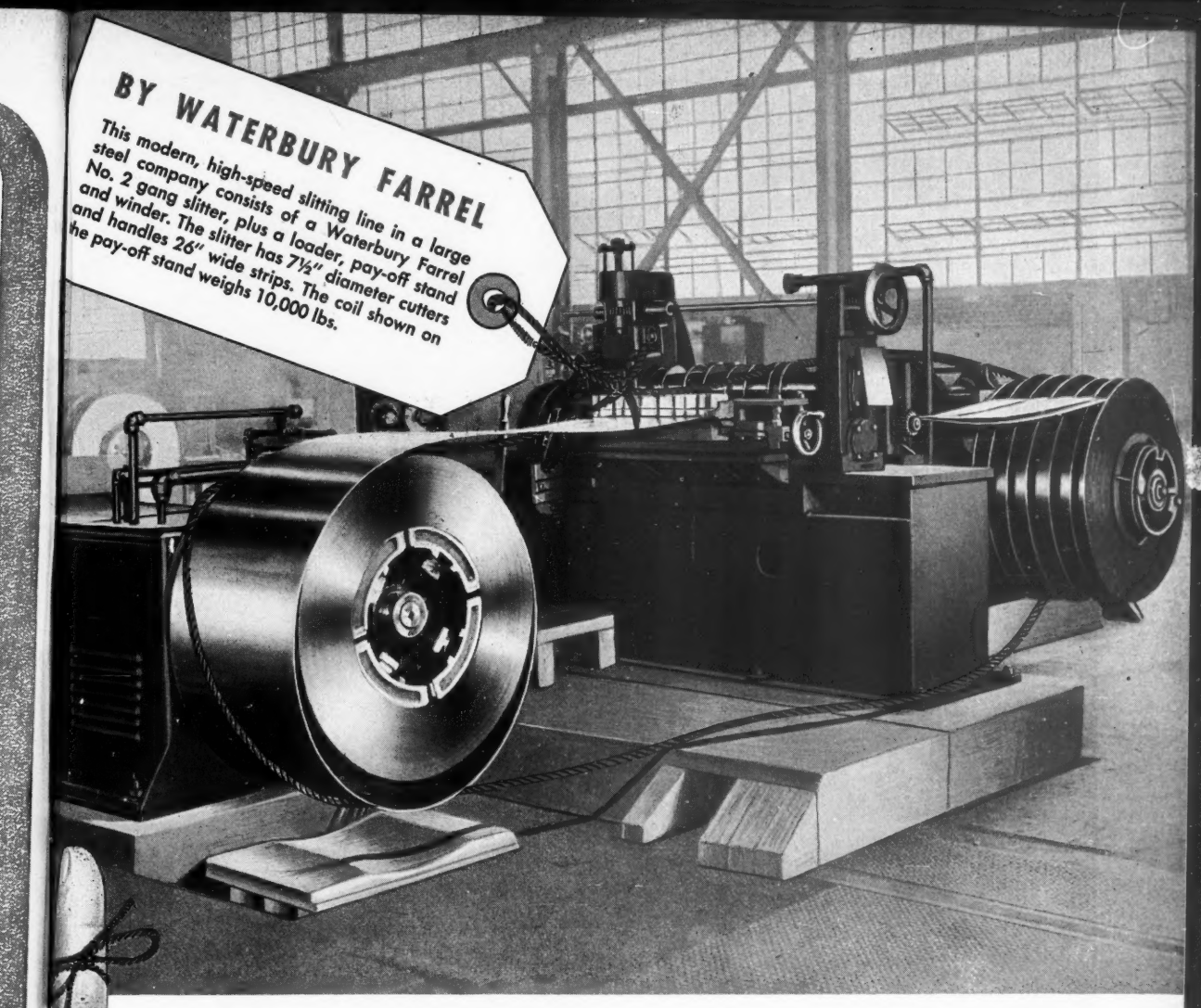
"... in a few hours, cleaned up housings that otherwise would have had to be scrapped."

*

"... washed out a layer of sand from inside the cylinder in less than two hours, a job we could have done with no other available equipment."

LOOK TO *Linde* Trade-Mark know-how . . . show-how . . . products and processes FOR WELDING, CUTTING, TREATING, FORMING METALS

The term "Linde" is a registered trade-mark of Union Carbide and Carbon Corporation.


BY WATERBURY FARREL
This modern, high-speed slitting line in a large steel company consists of a Waterbury Farrel No. 2 gang slitter, plus a loader, pay-off stand and winder. The slitter has 7½" diameter cutters and handles 26" wide strips. The coil shown on the pay-off stand weighs 10,000 lbs.

emember this:

WHEN YOU NEED A MODERN ANSWER TO SPECIFIC SLITTING REQUIREMENTS

Many manufacturers are finding that slitting their own strip pays in time and dollars.

From Waterbury Farrel you can get modern, high-speed slitting machines fitted by type, size and accessory equipment to your specific requirements.

There are six standard sizes of Waterbury Farrel gang slitters capable of handling a wide range of gauges and widths. Accessory equipment such as loaders, pay-off stands, winders, coilers, backrolls, scrap cutters etc., are available to make the entire slitting set-up a Waterbury-Farrel "package".

Special attachments can be "engineered-in" when necessary to adapt the slitters to special applications.

Phone, write or wire for complete information.

WATERBURY FARREL FOUNDRY & MACHINE COMPANY

WATERBURY, CONNECTICUT, U. S. A. • *Sales Offices:* Chicago, Cleveland and Millburn, N. J.

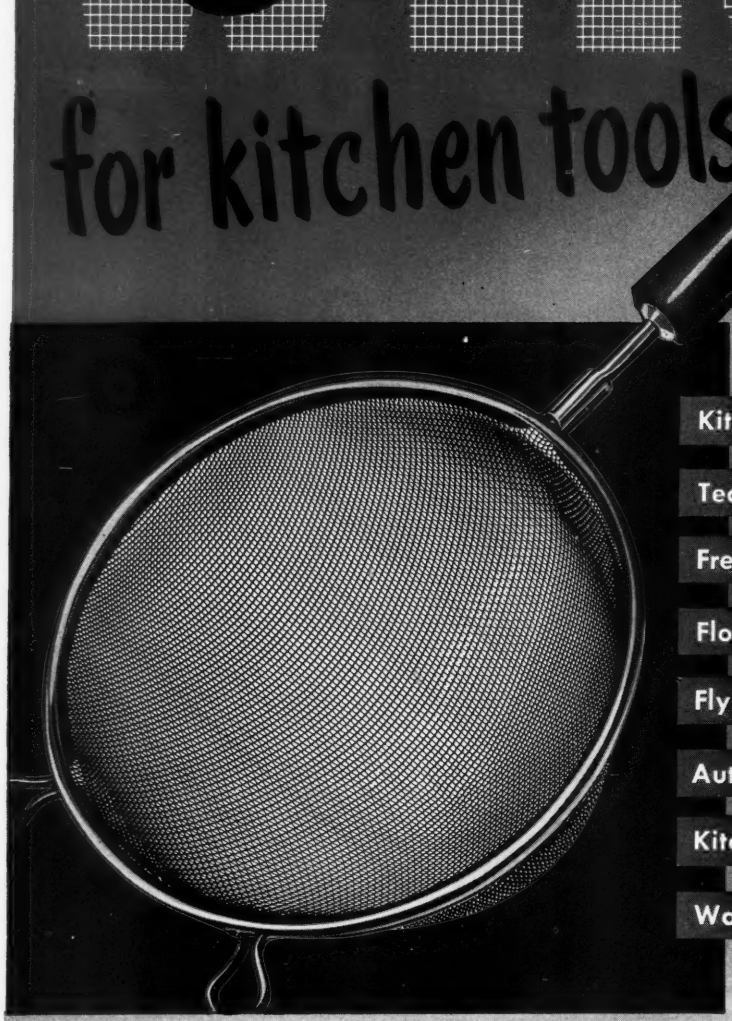
WF-1

A FEW OF THE MANY TYPES OF METAL WORKING MACHINERY MADE BY WATERBURY FARREL

LD PROCESS BOLT AND NUT MACHINERY — Headers (all types) • Re-headers • Trimmers • Thread Rolling chines • Slotters • Nut Tappers, etc. POWER PRESSES — Crank • Cam and Toggle; also Rack and Pinion Presses nsfer Presses • Multiple Plunger Presses including Horizontal Drawing Presses and Eyelet Machines; Hydraulic sses, etc. MILL MACHINERY — Rolling Mills • Wire Flattening Mills, Chain Draw Benches • also Slitters ighteners • Pointers • Swagers • Cut-off Saws • Coilers • Winders and related equipment. WIRE MILL UIPMENT — Continuous Fine Wire Drawing Machines • including Upright Cone and Tandem Wire Drawing Machines • Bull Blocks • String-up Machines • Spoolers, etc.

In Equipment Experience Cour

WIRE CLOTH for kitchen tools



- Kitchen Strainers
- Tea Strainers
- French Fry Baskets
- Flour Sifters
- Fly Swatters
- Automatic Dishwasher Baskets
- Kitchen Range Air Filters
- Water Faucet Filters

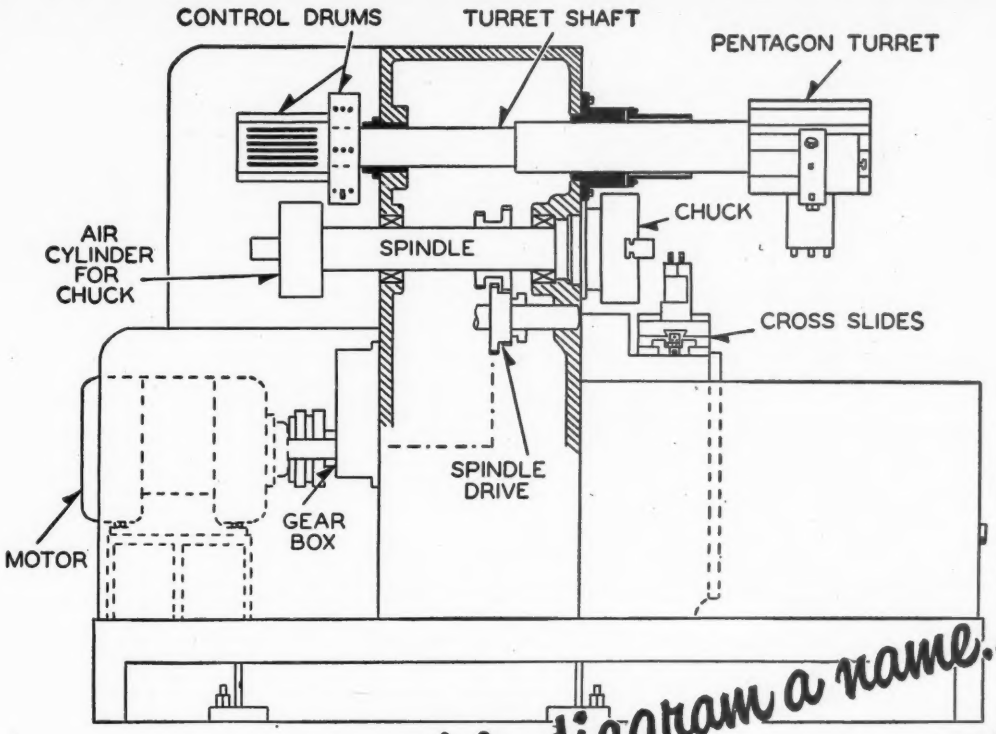
If you use wire cloth—whether it's for dishwashers or diesels . . . automobiles or aircraft . . . flour sifters or floor furnaces . . . french fryers or farm tractors—1-inch to 120-mesh—consult Reynolds Engineers.

REYNOLDS WIRE DIVISION, NATIONAL-STANDARD CO., **DIXON, ILLINOIS**

Divisions of National-Standard Co.

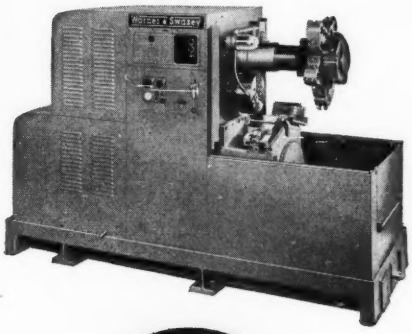
ATHENIA STEEL	*Clifton, N. J.*	Flat, High Carbon, Cold Rolled Spring Steel
NATIONAL-STANDARD	*Niles, Mich.*	Tire Wire, Fabricated Braids and Tape
WAGNER LITHO MACHINERY	*Jersey City, N. J.*	Metal Decorating Equipment
WORCESTER WIRE WORKS	*Worcester, Mass.*	Round and Shaped Steel Wire, Small Sizes

NS NATIONAL-STANDARD Company NILES MICHIGAN



We've given this diagram a name...

"SIMPLICITY!"



WE'VE LABELED IT "simplicity" because the machine it represents *is* so simple. Engineered simplicity is designed into the Warner & Swasey 1-AC Single Spindle Automatic Chucking Machine.

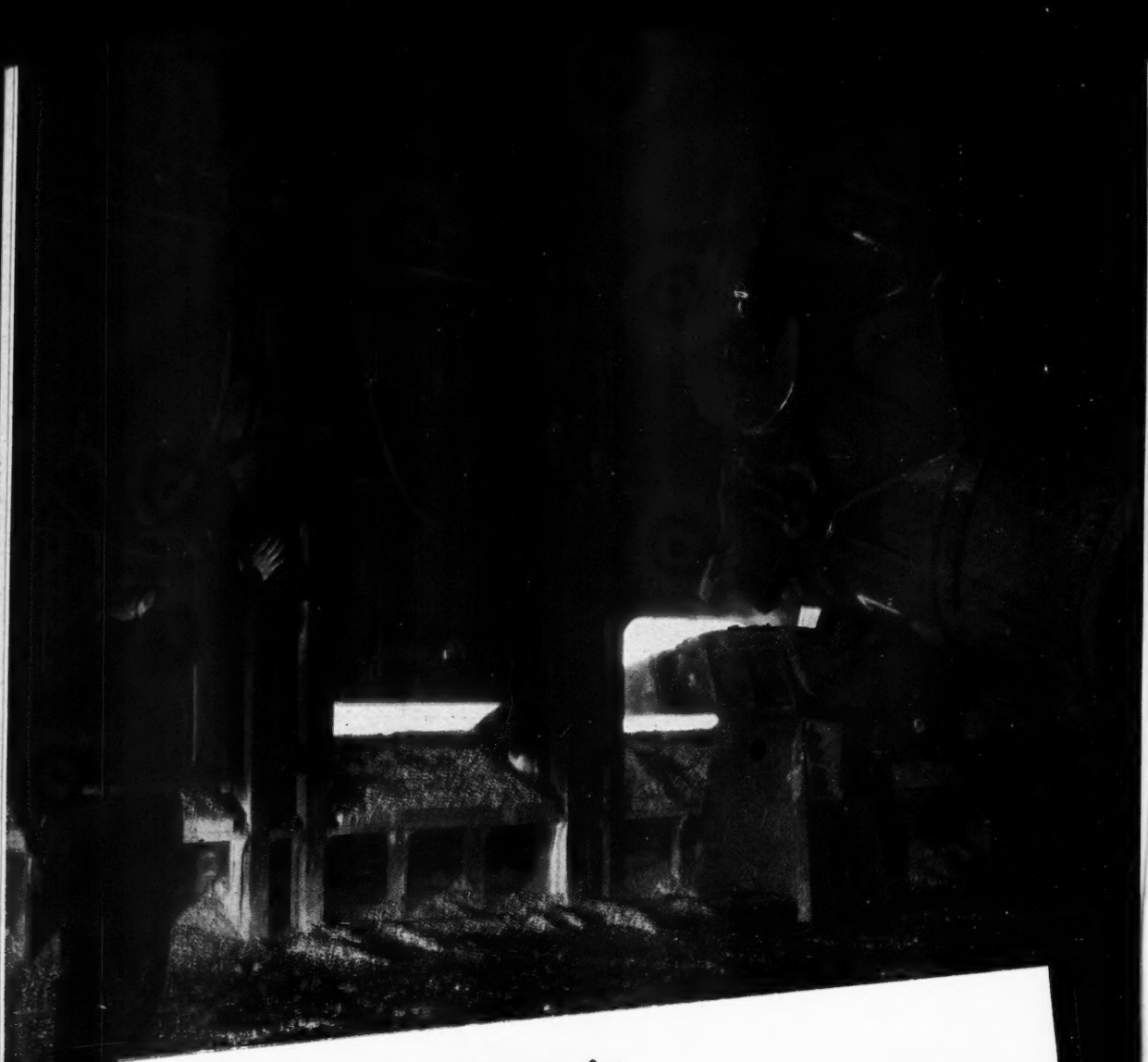
The 1-AC is simple and easy to set up . . . simple to tool, and simple to operate. There are no cams to change, and tooling stations are easy to get at. A wide range of speeds and feeds are readily available.

You get accurate, automatic machine operation on even small lot jobs that were never practical for automatic machines before.

Certain machining jobs in your plant—even in small or medium lot runs—can undoubtedly be done faster, and with less manpower, with the 1-AC Automatic. To find out how this 1-AC fits into your production picture, call our Field Representative in your territory.

WARNER & SWASEY
Cleveland

YOU CAN MACHINE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY TURRET LATHES, AUTOMATICS AND TAPPING MACHINES



Harbison-Walker Refractories for every type of furnace in the iron and steel industry

The conditions that affect the life and service of iron and steel furnaces are many and differ widely. To provide the exact kinds of refractories that will enable steel producers to maintain maximum production with greatest economy under all these varying conditions, Harbison-Walker offers the complete range of types and classes for every specific requirement.

Harbison-Walker Refractories Company

AND SUBSIDIARIES

WORLD'S LARGEST PRODUCER OF REFRACTORIES

General Offices . . . . . Pittsburgh 22, Pennsylvania

HARBISON-WALKER

THE WORLD'S *Most Complete* REFRACTORIES SERVICE

SPECIALIZED REFRACTORIES

for IRON and STEEL producers

BLAST FURNACE REFRACTORIES

For more than half a century, Harbison-Walker Blast Furnace Refractories have been the leading choice of the industry. The major portion of linings currently installed in the United States, Canada, and Mexico are Harbison-Walker brands.

VARNON BF—extremely hard-fired, super-duty fireclay brick, having high strength and density, low porosity and permeability, immunity to disintegration by carbon monoxide, high refractoriness and resistance to slagging.

H-W 18 Pa. and H-W 18 Ky.—hard-burned, high duty fireclay brick. Exceptionally resistant to abrasion, and to disintegration by carbon monoxide. H-W 18 brick are low in permeability and porosity, have high mechanical strength and excellent volume stability at working temperatures.

BENEZET BF and H-W Ky. BF—for many years the standard refractories for most blast furnaces—for hearth and bosh, inwall and top linings.

BLAST FURNACE STOVE REFRACTORIES

Harbison-Walker brands of high duty and super-duty fireclay refractories fulfill all the exacting requirements for stove linings, domes and checkers.

OPEN-HEARTH and ELECTRICAL STEEL FURNACE REFRACTORIES

STAR SILICA—The long established silica brick. Characterized by high refractoriness, rigidity under load at high temperatures, good resistance to abrasion and fluxing.

VEGA—the super-duty, high temperature silica brick especially suited for extremely severe operating conditions.

VEGA BOND—super-duty silica bonding mortar of excellent workability and super-duty refractoriness; thermal expansion entirely compatible with that of silica brick.

CHROMEX B—extremely hard burned chrome-magnesite brick with excellent volume stability and strength at high temperatures.

CHROMEX—a chemically-bonded chrome-magnesite brick having excellent spalling resistance.

METALKASE—a chemically-bonded metal-encased magnesite-chrome brick. Dense, strong, slag resisting and low spalling tendency.

H-W MAGNESITE—the standard burned magnesite refractory in the steel industry for more than fifty years.

H-W CHROME—a hard burned chrome brick especially adapted for various specific uses.

H-W MAGNAMIX—a magnesite ramming mixture for monolithic bottoms and for patching. Easily installed to the desired contour with great saving in time.

OTHER Iron and Steel Furnace REFRACTORIES

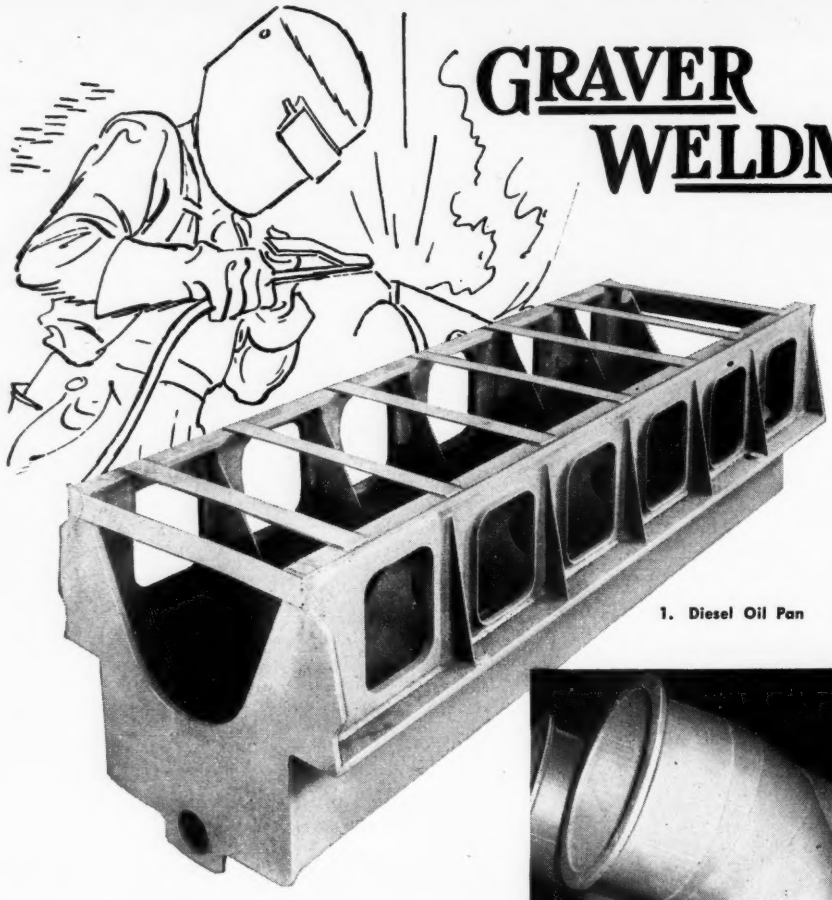
For the widely diversified furnace applications, Harbison-Walker provides refractories which meet every need. These include high-alumina brick of all classes; super-duty and other classes of fireclay refractories; insulating fire brick; high temperature bonding mortars and ramming mixtures; plastics and castables.

Harbison-Walker Refractories Company

AND SUBSIDIARIES

WORLD'S LARGEST PRODUCER OF REFRACTORIES

General Offices . . . . . Pittsburgh 22, Pennsylvania



GRAVER WELDMENTS

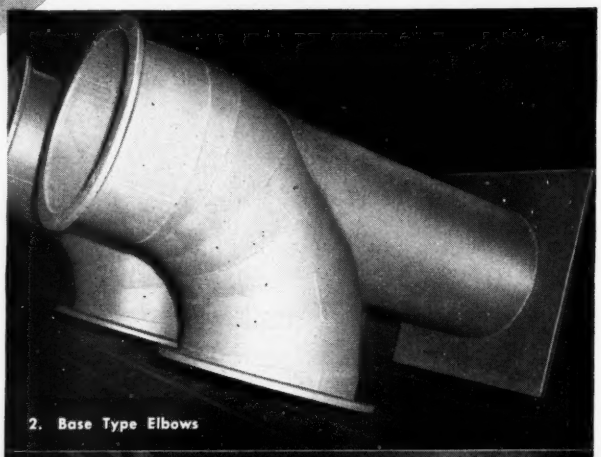
1. Diesel Oil Pan

for the Metal-Working Industries

Graver's unexcelled skill in all welding techniques has—over the years—provided the Graver weldery with an unusually broad experience in the special requirements of all sorts of industries.

This breadth of knowledge includes not only the craft of welding itself, but also the related fields of engineering and welding research. Graver is staffed to carry out a complete project in welded fabrication, from design through to finished products, with full quality control.

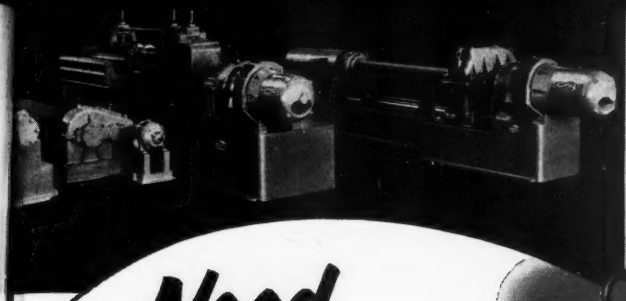
Shown here are a few examples of Graver weldments. They indicate the advantages of welded fabrication—lightness, great strength, economical costs and close tolerances—combined in every unit by Graver's skill.



2. Base Type Elbows

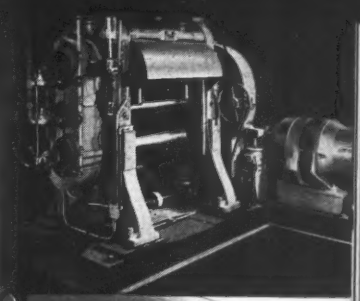
3. Mine Hoist Drums

GRAVER TANK & MFG. CO., INC.
EAST CHICAGO, INDIANA
NEW YORK • CHICAGO • PHILADELPHIA • WASHINGTON
DETROIT • CINCINNATI • CATASAUQUA, PA.
HOUSTON • SAND SPRINGS, OKLA.



Ajusto-Spedes are used on the slitting and rewinding line in the metal fabricating industry.

Here, Ajusto-Spede is used on special calender roll in the rubber industry.



Need stepless adjustable speeds with A.C. power?

Here's your answer

Louis Allis Ajusto-Spede

Ajusto-Spede gives you a complete, packaged A.C. adjustable speed drive — 1 to 75 HP. To help you meet your specific design needs, it provides:

1. Accurate Control! The tachometer feedback circuit maintains close regulation over the entire speed range.

2. Flexibility! Many modifications are available: Eddy current brake, for fast, smooth braking. Torque limit control for controlled acceleration and overload protection. Threading, inching or jogging, and many other special control features. Speed ranges up to 17:1 available.

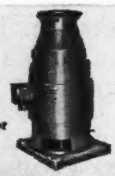
3. Compactness! Installation is simple — often the complete drive can be mounted on or inside the driven machine. Small electronic control panel and pushbutton station can be mounted at any convenient location.

Typical Ajusto-Spede applications include printing presses, extruders, mixers, ironers, calender rolls, punch presses, etc. Investigate the advantages of applying Ajusto-Spede to *your* particular problem. Write for complete information or contact the Louis Allis District Office nearest you.

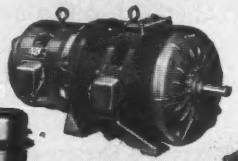
AS-101

THE LOUIS ALLIS CO., *Milwaukee 7, Wisconsin*

We specialize in SPECIAL MOTORS



Extractor Motor with Integral Blower



Ajusto-Spede with Eddy Current Brake

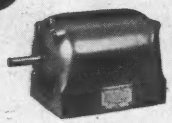
Special Arbor Type Motor

Splash-Proof Motor with Flange

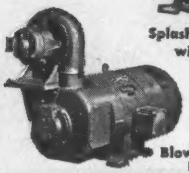
Self-Cleaning Textile Motor

Gearmotor

Single Phase Pump Motor with Tripod Base



Sanitary Motor

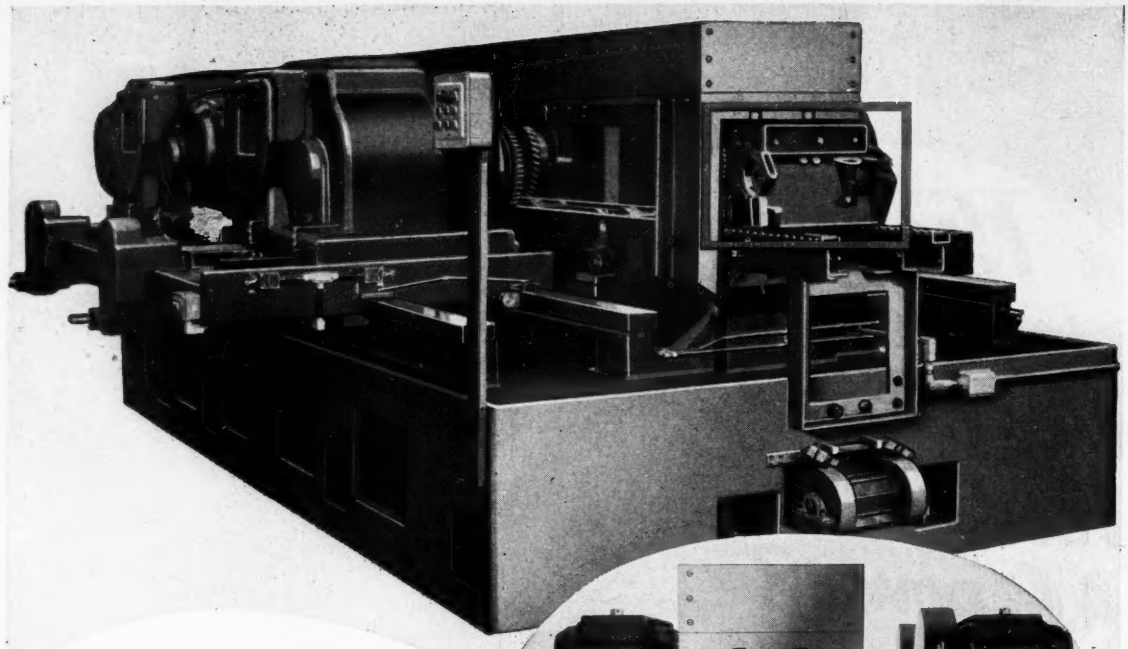


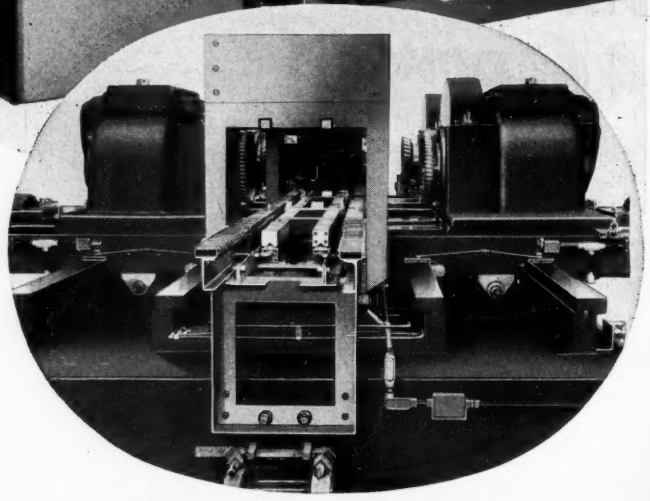
Blower Ventilated Frequency Converter

Rolled Shell Shaftless Motor

Oil-Well Pumping Motor

Standard or special — we build it. Whatever electrical or mechanical modifications or features you need, there is a Louis Allis motor that will do your toughest jobs better.





ANOTHER

Automatic Transfer Milling Machine

DESIGNED AND BUILT BY

MOTCH & MERRYWEATHER

End view showing transfer mechanism and 75 h. p. milling heads in retracted, accessible position.

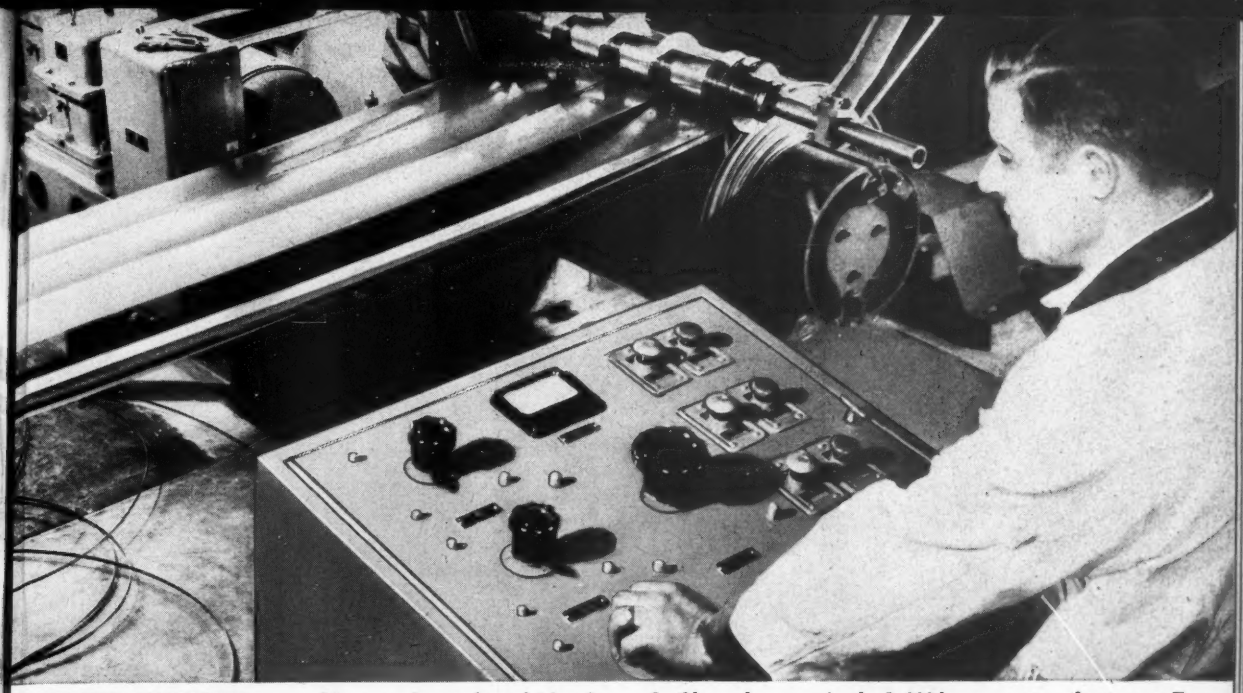
to Rough-Mill and Finish-Mill Both Ends of Automotive Cylinder Blocks

• Cylinder blocks are fed to the machine, transferred from station to station, and discharged to the next operation. This machine forms an important link in a completely automatic production line.

Manufactured by —THE MOTCH & MERRYWEATHER MACHINERY CO.—
CLEVELAND 13, OHIO

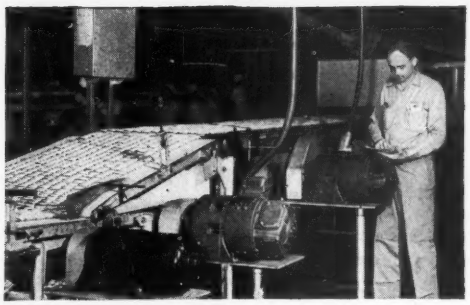
Builders of Circular Sawing Equipment, Production Milling, Automatic and Special Machines

PRODUCTION-WITH-ACCURACY • MACHINES AND EQUIPMENT



G-E SPEED VARIATORS, operated by central control panel (above) were chosen by E. F. Hauserman Co. of Cleveland, Ohio for its steel slitting operation. General Electric Speed Variators provide flexible performance in the 1–200-hp range at moderate cost. For even greater accuracy and versatility in automatic operation, these drives may include amplidyne or electronic regulators.

These G-E Adjustable-speed Drives can help you boost your output, too!



G-E THY-MO-TROL* drives assure the Keebler Weyl Baking Co. of Philadelphia of proper baking for many different products. This electronic control is particularly suited for precise adjustable speed in 1/4 to 10-hp drives—offers speed ranges to 100:1 and more.

◀**G-E ACA MOTORS** give the Ford Motor Company a simple, compact, and lowest-cost method of controlling pump speeds at its oxygen generating plant, leased from Air Products Inc. This adjustable-speed motor requires no conversion equipment—an a-c induction motor with stepless speed adjustment by a simple twist of a dial.

*Reg. trade-mark of General Electric Co.

WHICH G-E DRIVES ARE BEST FOR YOU?

Because only General Electric makes *all major types* of electric adjustable-speed drives, it is best qualified to help you select the *right drive*. Send for these informative bulletins.

☐ A This 26-page manual describes *all* four types of drives and where to apply them. Bulletin GEA-5334. A

☐ B Lower cost, simplest a-c drive Bulletin GEA-4883. B

☐ C More flexibility, moderate cost. Bulletin GEA-5335. C

☐ D Top performance, ¼-10 hp Bulletin GEA-5337. D

☐ E Top performance, 1-200 hp Bulletin GEA-5336. E

General Electric Company,
Section B 646-19
Schenectady 5, N. Y.

Please send me the bulletins checked

☐ for reference only
☐ for planning an immediate project

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COMPANY .....

ADDRESS .....

CITY ..... STATE .....

GENERAL ELECTRIC

NEW ALL-STEEL

DODGE-TIMKEN PILLOW BLOCKS

Rugged! —FOR HEAVY DUTY SERVICE!

Compact! —LESS SPACE! LESS WEIGHT!

HERE are the bearings for industry's toughest jobs—in the most compact and rugged "package."

High radial and thrust capacities. Stamina to take heavy shock loads. All-steel construction that packs this load-carrying capacity into less weight and less space than ever before.

This brilliant achievement has been accomplished through pooling the engineering resources and bearing-building experience of Dodge and Timken. This new line so completely fills a need that engineers are already specifying "Dodge-Timken All-Steel" for some of America's heaviest machinery and largest industrial projects.

Completely assembled, permanently adjusted, lubricated and sealed at the factory, these All-Steel pillow blocks are shipped ready to go to work—wherever in industry the going is tough!

For detailed information and delivery dates write to Dodge, or call your Dodge Distributor.

DODGE

of Mishawaka, Ind.

CALL THE TRANSMISSIONEER your local Dodge Distributor. Factory trained by Dodge, he can give you valuable assistance on new cost-saving methods. Look for his name under "Power Transmission Equipment" in your classified telephone directory.

A JOINT ENGINEERING DEVELOPMENT BY DODGE AND THE TIMKEN ROLLER BEARING COMPANY

SHAFT SIZES: $2^{15}/_{16}$ to 10 in.

- All-Steel construction
- A new Timken bearing design
- High radial and thrust capacities
- Compact—minimum dimensions
- Minimum weight; maximum strength
- Fully self-aligning with spherical outer race
- Both expansion and non-expansion types
- Adapter mounting, proven through the years
- Double piston ring seals
- Sealed both on and off the shaft
- Fully assembled, permanently adjusted, lubricated and sealed at the factory

DODGE MANUFACTURING CORPORATION, 4400 Union St., Mishawaka, Indiana

A few words about

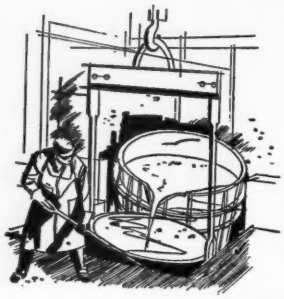
GRAINAL ALLOYS

and how they are

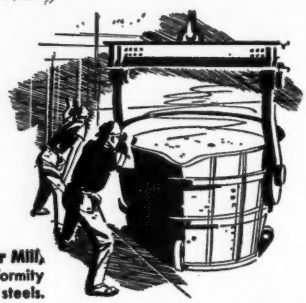
Metallurgically Engineered

to produce greater uniformity in your boron treated steels

In our Laboratories every aspect of Grainal Alloys is carefully studied.



In our Plant exacting methods of production protect the quality of Grainal Alloys.



In your Mill, greater uniformity in your boron steels.

Uniformity. Consistent Results.

These are the demands of today's steelmaker. To make certain they are answered, we have *metallurgically engineered* our Grainal alloys.

In our laboratories, in our plant, every care is taken to insure a product of the correct composition and highest quality.

Result: A uniform product that enables you to produce steels of consistently high hardenability. And note—with Grainal you achieve this result with a minimum boron addition.

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MAKERS OF ALLOYS, CHEMICALS AND METALS

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TUBE MILLS . . .
SMALL TUBING • LARGE PIPE
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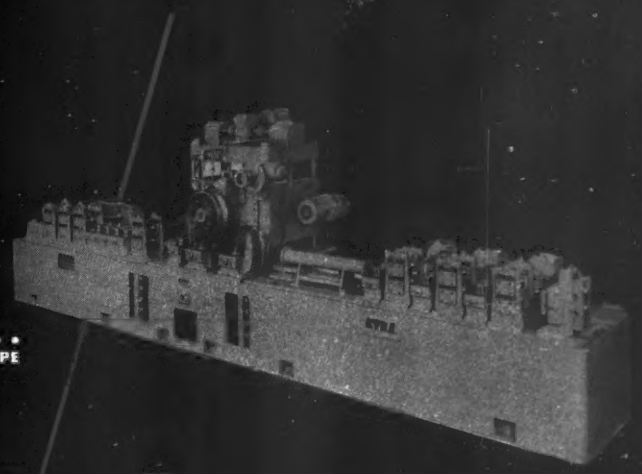
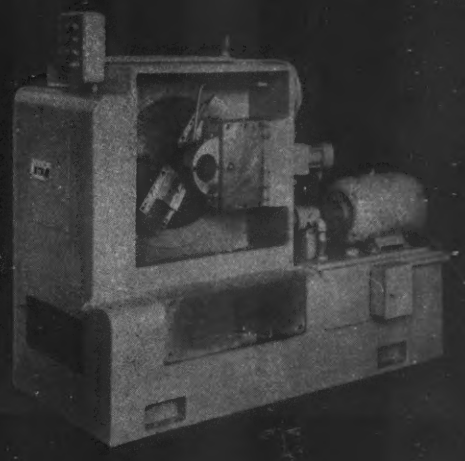
. . . SWAGING MACHINES
RUGGED SERVICE

TUBE CUT-OFF MACHINES . . .
FULLY AUTOMATIC
NO JOB TOO TOUGH





THE ETNA MACHINE COMPANY

Lower costs through greater rate of production is the by-word at Etna. Regardless of your requirements for swaging machines, tube mills and tube cut-off machines, Etna engineers have the know-how to affect a *better* answer. For more than half a century, the Etna Machine Company has progressively developed a sales and service organization that today stands ready to give you prompt and efficient service . . . anywhere in the world. Write, call or wire regarding your specific job problems.

FOR ETNA SALES AND SERVICE . . .

ART THOMAS MACHINERY CO.
Los Angeles 58, California

BLACKMAN & NUETZEL MACHINERY CO.
Kansas City, Missouri
St. Louis 8, Mo.

BRYANT MACHINERY & ENGINEERING CO.
Chicago 6, Illinois

J. L. OSGOOD MACHINERY & TOOL CO.
Buffalo 2, N. Y.

JOSEPH C. JONES COMPANY
Successor to JONES & YODER
New York 16, N. Y.

MOTCH & MERRYWEATHER MACHINERY CO.
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Cleveland 13, Ohio
Dayton, Ohio
Detroit 2, Michigan
Pittsburgh 22, Pa.

OATIS MACHINERY CO.
Ft. Wayne 6, Indiana
Indianapolis 4, Indiana
Toledo 10, Ohio

W. E. SHIPLEY MACHINERY CO.
Swaging Machines Only
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COMPAGNIA ITALIANA FORME ACCIAIO
Milano, Italy

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GASTON E. MARBAIX, INC.
London S. W. 11, England

J. H. RYDER MACHINERY CO., LTD.
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Toronto 5, Ontario
Windsor, Ontario

MARBAIX, INC.
New York 7, N. Y.

THE ETNA MACHINE CO., 3400 MAPLEWOOD AVE., TOLEDO 10, OHIO

What do you do when you don't have the right size v-belt in stock?

1

Contact your supplier for a replacement

...and wait for delivery

...wait—and watch production stay at zero

2

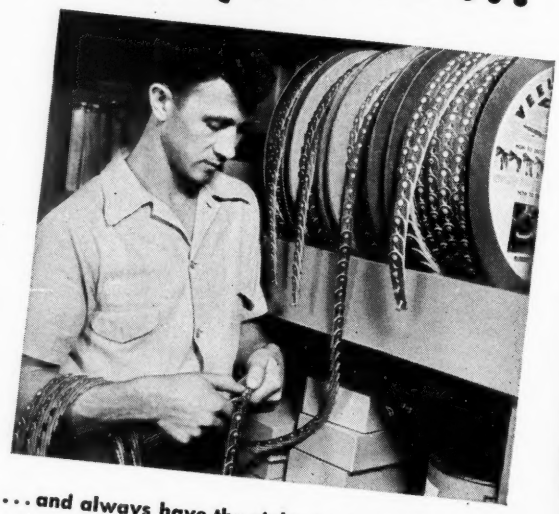
Send someone to get the required belt

...and pay your employee while he goes for the belt

...pay through loss of production

3

Stock VEELOS...



...and always have the *right* size belt when you need it

...any length can be made up from a 100-foot reel

...inventory is automatically maintained

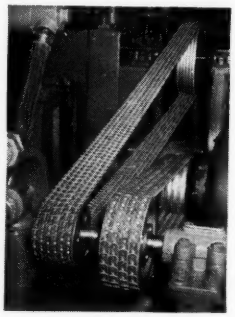
...available from 350 distributors

GET ALL THE FACTS

This Veelos Data Book gives complete details about construction, installation and uses. Write for free copy of this money-saving book today.

MANHEIM MANUFACTURING & BELTING COMPANY
613 Manbel St., Manheim, Pa.

VEELOS in stock is Production Insurance



Belts for replacement always on hand—just 4 reels of Veelos in the 0, A, B and C widths can replace up to 316 different sizes of endless v-belts.

Link construction permits quick installation—without removing outboard bearings.

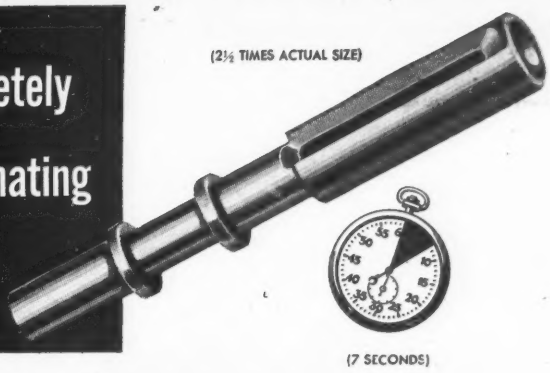
Adjustability provides controlled tension on each belt—vibrationless, full power delivery is assured.

VEELOS
THE LINK
V-BELT

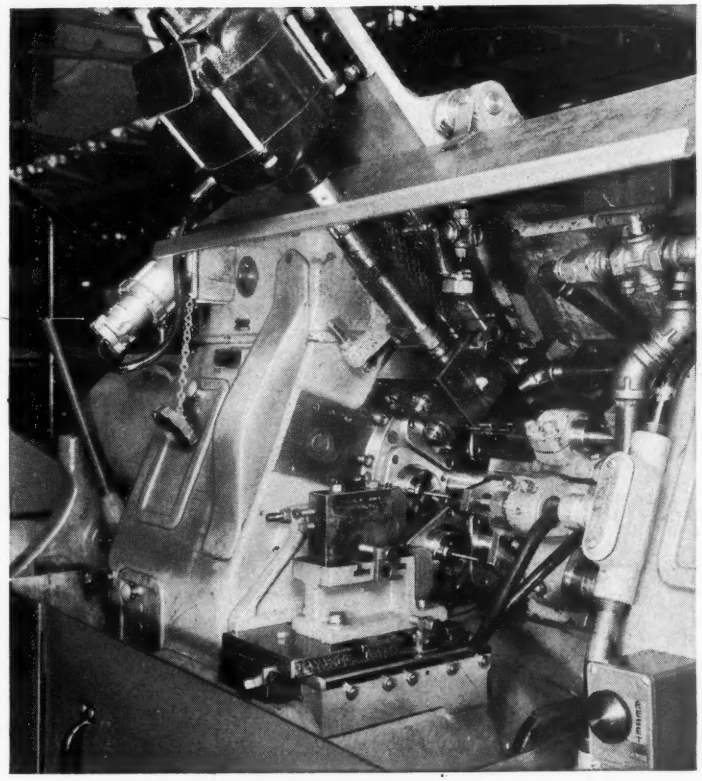
ADJUSTABLE TO ANY LENGTH · ADAPTABLE TO ANY DRIVE

Made in all widths in three types: regular, oil-proof, static conducting. Also double V in 0, A and B. Packaged on reels in 100-foot lengths. Sales engineers in principal cities; over 350 distributors throughout the country. VEELOS is known as VEELINK outside the United States.

This copper alloy part completely machined in 7 seconds—eliminating 3 secondary operations



ACME-GRIDLEY BAR AUTOMATIC PERFORMANCE PLUS



Blanking, slotting the radius and back drilling are included in the twelve operations done by the Acme-Gridley *in 7 seconds*. Any one of these, done as a second operation, would take an equal amount of time.

Think of the savings in handling time, in machining time, in man-hours. And remember, these second operations can not be handled in one set-up unless the machine provides the wide, open tooling zones required for independent-power-driven auxiliaries—a feature of Acme-Gridley design.

This is no stunt job—it is typical of the savings thousands of users are making through Acme-Gridley tooling ingenuity. May we show how it can cut *your* costs?

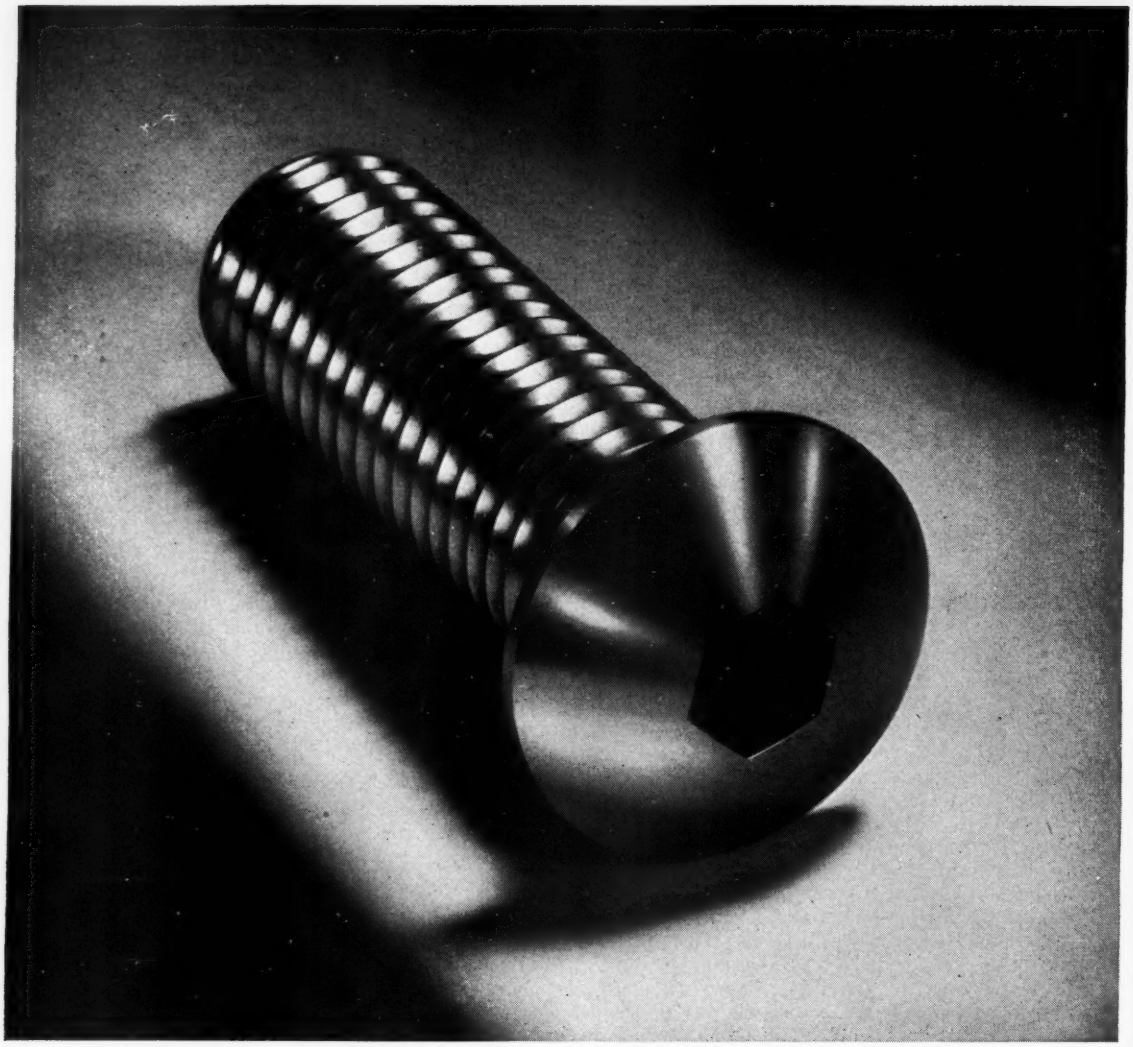
JOB FACTS

PART—Socket post, $1\frac{7}{16}$" long x .188" diam.
MATERIAL—Copper Alloy
OPERATIONS—12, including slot radius, pick off and back drill, concentric with front drill
TIME—7 seconds, complete
MACHINE—Acme-Gridley RA-6 Spindle Bar Automatic

The NATIONAL ACME CO.

170 EAST 131st STREET • CLEVELAND 8, OHIO

ACME-GRIDLEY BAR and CHUCKING AUTOMATICS built in 1, 4, 6 and 8 spindle styles, maintain accuracy at the highest spindle speeds and fastest feeds modern cutting tools can withstand.



...and now UNBRAKO BUTTON HEAD SOCKET CAP SCREWS

These UNBRAKO screws are strong, accurate and uniform. They are designed for applications where countersinking is not practicable. They feature:

- **Head and threads concentric with the body**
- **Threads to head**
- **Low head height that streamlines design**
- **Nonslip drive that speeds assembly**
- **Nonburr socket that eliminates injuries from sharp splinters**
- **Class 3 fit—an UNBRAKO standard**
- **Stocks at your UNBRAKO industrial distributor**
- **Standard sizes—# 8 through ⅝" diameter**

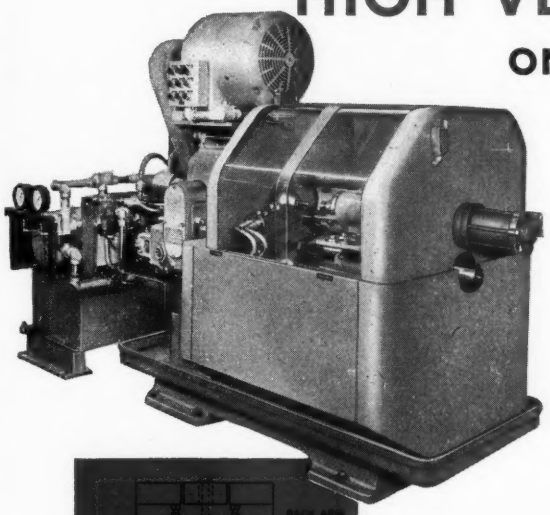
Write for literature. STANDARD PRESSED STEEL CO., Jenkintown 33, Pennsylvania.

UNBRAKO® SOCKET SCREW DIVISION

SPS

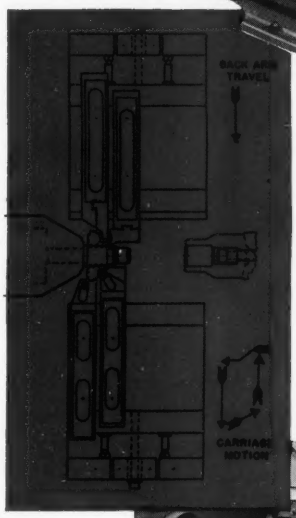
JENKINTOWN PENNSYLVANIA

AUTOMATICITY BACKS UP HIGH VELOCITY TURNING ON FAY AUTOMATICS



SIDE GEARS
18 Seconds Floor to Floor — 635 SFM

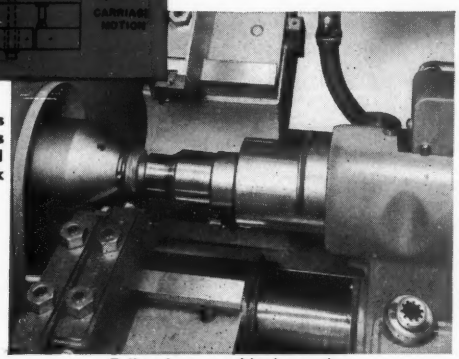
Two 8" Fays, with Automatic Sequential Control, machine all exterior surfaces of the blanks in two operations; one machine for each. The major diameter is 2-15/16" and floor to floor time is approximately 18 seconds in each operation.



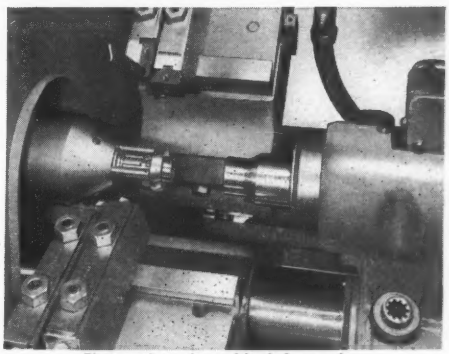
Automatic Cycle—The machines are equipped with automatically operated splash guards and automatically air-operated tailstock rams for pressing the blank onto a splined arbor equipped with automatically operated ejector pins.

The operator places the blank on the end of the arbor, and pushes the cycle start button. *Automatically, the guard closes, the tailstock ram presses the piece onto the arbor and then retracts. The carriage turns, the back arm faces, and at the end of the cuts, ejector pins push the piece onto the loading section of the arbor* from which it is removed manually.

FIRST OPERATION: Note intricate movements of the carriage, which turns the hub, back angle and major diameter. The back arm faces and forms.



Tailstock presses blank on arbor



Ejector pins release blank from arbor

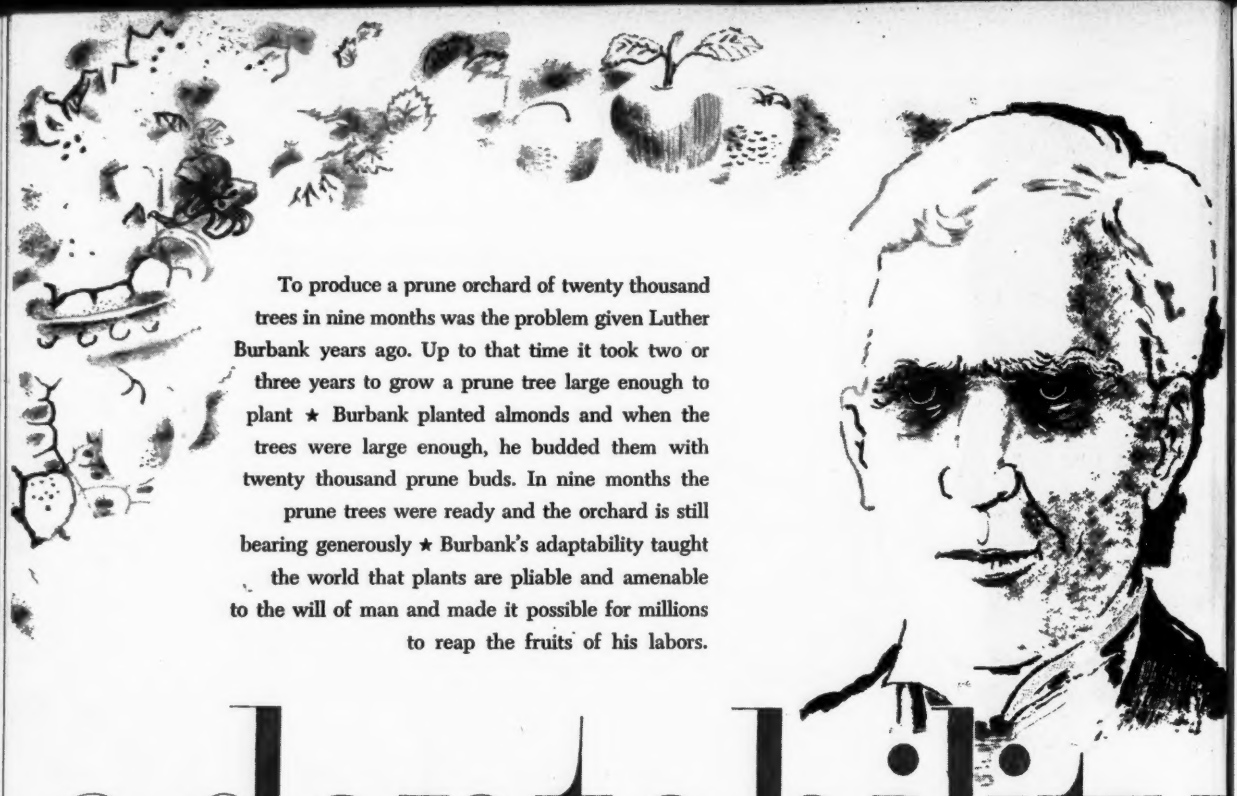
Production management regularly relies upon the engineering services of Jones & Lamson for the latest information on methods, costs, tooling and performance. Why not consult us about YOUR *turning, threading and inspection problems.*

JONES & LAMSON

Machine Tool Craftsmen Since 1835

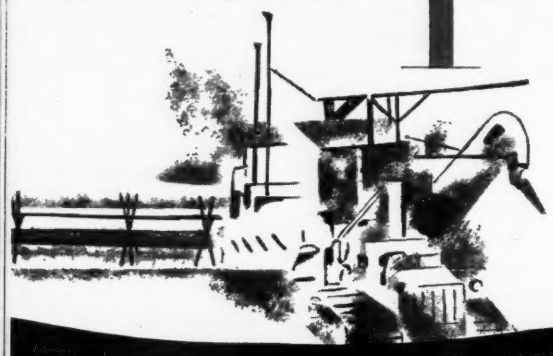
JONES & LAMSON MACHINE CO., Springfield, Vt., U.S.A. Dept. 710

FAY LATHE DIVISION

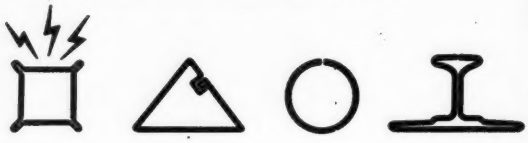


To produce a prune orchard of twenty thousand trees in nine months was the problem given Luther Burbank years ago. Up to that time it took two or three years to grow a prune tree large enough to plant ★ Burbank planted almonds and when the trees were large enough, he budded them with twenty thousand prune buds. In nine months the prune trees were ready and the orchard is still bearing generously ★ Burbank's adaptability taught the world that plants are pliable and amenable to the will of man and made it possible for millions to reap the fruits of his labors.

adaptability

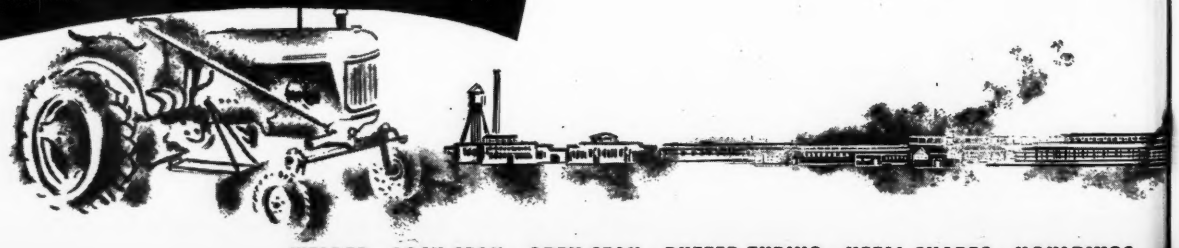


It may be a far cry from vegetables to Van Huffel, but farm equipment manufacturers will tell you they are both basic in the scheme of things ★ For instance, where deadweight must be cut from a tractor without sacrificing strength . . . where a farm implement must be easier to carry, move or lift without complicated fabrication . . . a lot of production problems are being solved by the adaptability of Van Huffel Metal Shapes and Tubing.

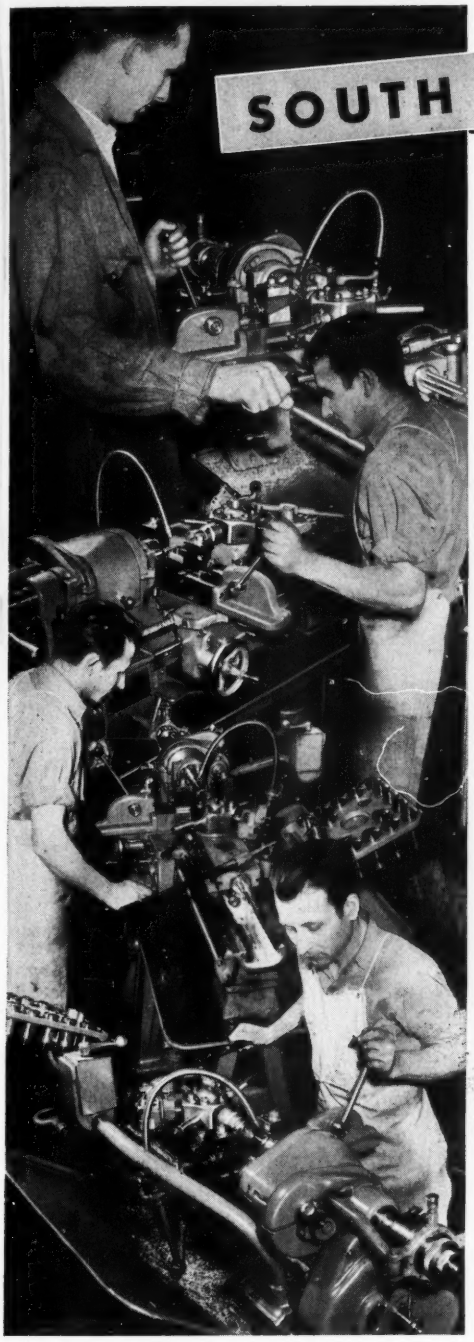


Van Huffel

TUBE CORPORATION · WARREN, OHIO



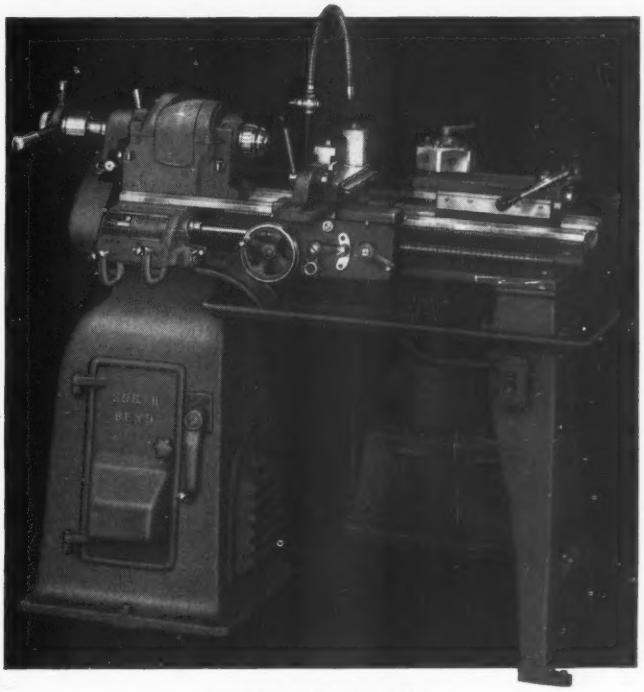
WELDED · LOCK SEAM · OPEN SEAM · BUTTED TUBING · METAL SHAPES · MOULDINGS



SOUTH BEND 1000 TURRET LATHE

Cost-Cutting Versatility

This precision turret lathe will cut your machining costs on small parts. Built-in accuracy, ease of operation and a wide range of speeds and feeds insure high production and close tolerances. Practical attachments simplify tooling the lathe for jobs which might otherwise require special fixtures. What's more, your least experienced operator will soon be a top producer on the 1000 Turret Lathe — it's that easy to run. Find out how this versatile turret lathe can improve your machining — *send coupon now.*



SPECIFICATIONS

Swing	10-1/8"
Turret to Spindle	19-3/8"
Collet Capacity	1"
Spindle Bore	1-3/8"
Spindle Speeds	12
	50 to 1357 r.p.m.
Power Longitudinal Feeds	48
	.0015" to .0836"
Power Cross Feeds	48
	.0006" to .0309"
Thread Cutting Feeds	48
	4 to 224 per inch

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South Bend 22, Indiana
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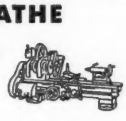

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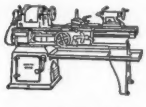
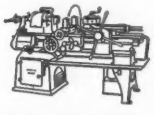
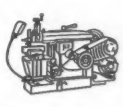


☐ 9" and 10" BENCH LATHES



☐ 10" to 16-24" FLOOR LATHES

☐ ½" and 1" Collet TURRET LATHES



☐ 14" DRILL PRESSES ☐ 7" BENCH SHAPERS

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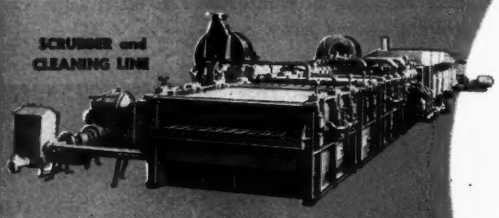
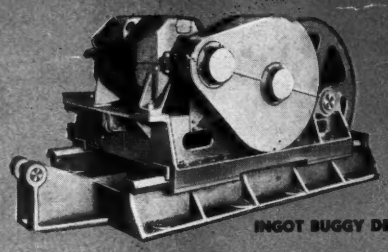
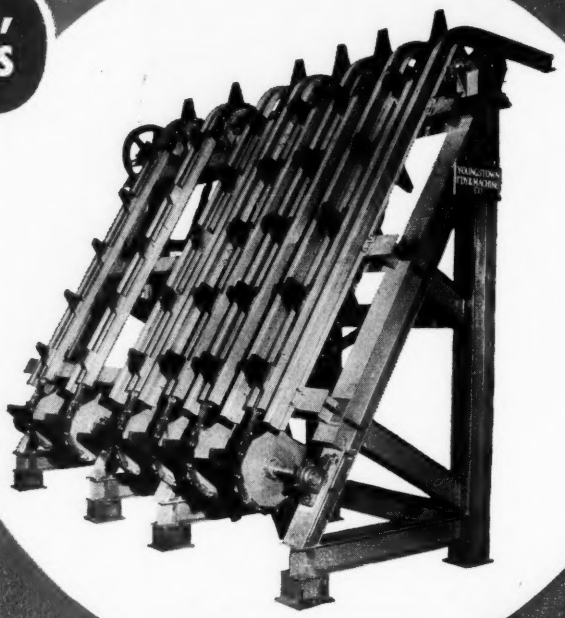


SCRUBBER and CLEANING LINE



INGOT BUGGY DRIVE

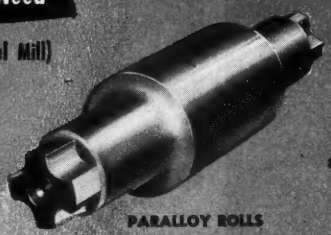


60° INCLINE BILLET ELEVATOR

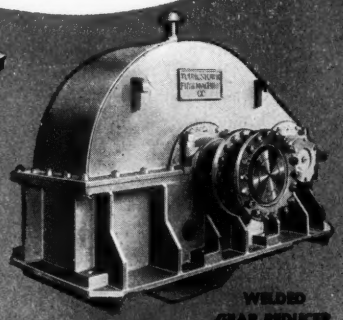
Check this List for the Products You Need

- PARALLOY ROLLS (Pinch, Coiler, Tension, Steel Mill)
- HYDRAULIC SLAB AND BILLET PILERS
- STRIP AND SHEET OILING EQUIPMENT
- SHEET SCRUBBER AND CLEANING LINES
- HOT SAWS—ROCKING AND SLIDE TYPES
- HOT BEDS—COOLING BEDS—TRANSFERS
- BILLET EJECTORS—PINCH ROLL STANDS
- SLITTERS—SPECIAL SHEARS AND GAUGES
- TILTING TABLES—Traveling and Lifting Tables
- Continuous PICKLING Lines—ROLLER LEVELERS
- FURNACE Charging Equipment—Furnace Pushers
- Strip Steel COILERS and REELS—SCRAP BALLERS
- RAILROAD Spike Forming Machines—ROLL LATHES
- Sheet GALVANIZING Lines—Wire Patenting Frames
- Stretcher Levelers—Angle and Shape Straighteners
- Rolling Mill Tables—Gear and Individual Motor Types
- DUCTILE CASTINGS (80,000 PSI.)

Machinery Built to Customer's Design and Detail Drawings



PARALLOY ROLLS



WELDED GEAR REDUCER

42" ROLL LATHE

The Youngstown Foundry & Machine Co.

OVER SIXTY YEARS OF SERVICE TO THE STEEL INDUSTRY

Youngstown, Ohio

6*

Cut Welding Time 40%!

GET { fewer rejects!
no burn-throughs!
100% penetration!
X-ray quality!

Use a P&H AC Welder

— *the only welder with Instantaneous Control*

Ideal for use with inert gas. Lets you handle "hard-to-weld" metals with ease — aluminum, magnesium, brass, copper, stainless, high carbon, high alloy, and low carbon steels

A touch of your toe instantly gives you the exact heat you need — there's no time lag! That's how this P&H AC Welder gives you the instantaneous control you don't get with other welders.

When you use it on high frequency with inert gas, you can fabricate to close tolerances. And there's no burn-back to oxidize the metal before you get started.

The P&H Inert Gas Welder saves production time these five ways — no other welder makes the work so easy:

1. **Foot switch automatically starts power, high frequency, gas, water.**
2. **Arc starts instantly without touching work.**
3. **Foot control instantly provides exact heat needed *while* welding.**
4. **Foot switch cuts power and high frequency immediately or gradually at completion of weld.**
5. **Automatic time delay shuts off gas and water.**

There are other outstanding P&H AC Welder features: P&H Dial-lectric Control that eliminates moving parts — for lower maintenance cost, easier operation. Built-in high-frequency unit that eliminates additional external equipment. Stepless amperage regulation. Unusual arc stability. Selector switch that gives operator choice of standard or high frequency.

Cut *your* welding time for non-ferrous and "hard-to-weld" metals. Get faster, easier, sounder welds — fewer rejects. Use a P&H AC Welder.

Ask your P&H representative for further information — or write us.

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HARNISCHFEGER CORPORATION
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CUTTING 20 GAGE and 5/8 PLATE SIDE-BY-SIDE AT ONE STROKE

Photograph shows operators cutting ⅝" plate and 20 gage sheet steel simultaneously on NIAGARA Power Squaring Shear. No change in knife adjustment is necessary.

The ability of Niagara Power Squaring Shears to cut thick and thin plate both at the same time with the same knife setting is a dramatic demonstration. Visitors at our plant can see this done every day. There is no necessity for tinkering with the knife adjustment.

Demonstrates The Sound Engineering Design of

NIAGARA

POWER SQUARING SHEARS

● There is no compromise with sound, proven engineering when it comes to NIAGARA shear design and construction.

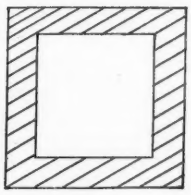
Accurate cutting depends primarily on rigidity of the shear's components.

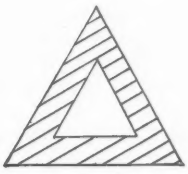
For bed, crosshead and holddown NIAGARA uses CLOSED BOX SECTIONS to resist with minimum deflection the horizontal, vertical and diagonal or torsional loads to which every shear is subjected.

NO OTHER SECTION WILL DO THIS JOB AS EFFICIENTLY.

Angle or channel shaped sections have long since been abandoned for use on NIAGARA Power Shears.

The economy of quality is remembered long after price is forgotten.

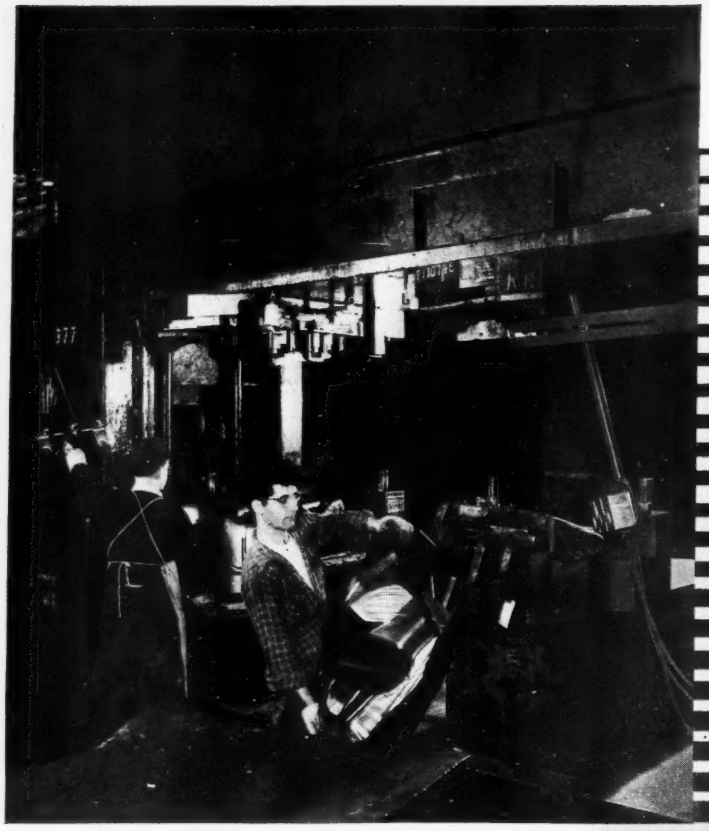




BED, CROSSHEAD & HOLDDOWN DESIGN

NIAGARA MACHINE AND TOOL WORKS, BUFFALO 11, NEW YORK

DISTRICT OFFICES: DETROIT, CLEVELAND, NEW YORK



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of versatile precision...

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The wide 160 inch bed area readily accommodates tandem or progressive dies as well as large single units. Slide control of this press equipped with a Cleveland Drum Type Friction Clutch is so sensitive and accurate that it is used for delicate precision work or it easily forms large rugged units. Sturdy, cast construction and extra long gibbing assure continuous accuracy.

If you are interested in increased press production, in greater press accuracy . . . *make your next press a Cleveland.* Let us help you with your future production plans.

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1902 1952

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Over 30 years ago, the famous ELECTRUNITE process of electric welding replaced the old-fashioned brazed and gas-welded methods. Today, every foot of length, every inch of circumference in an ELECTRUNITE tubular product is equally strong, equally resistant to corrosion, equally smooth and round.

We've improved techniques and added many products to the ELECTRUNITE line, too. At right you'll see examples of all the products we make at our big, modern plants in Cleveland and Elyria, Ohio, Brooklyn, New York, and Ferndale, Michigan.

ELECTRUNITE tubular steel products help many industries make things stronger . . . or lighter to move . . . or attractive longer . . . or safer . . . and at lower cost.

These first 50 years are only a start on new and wonderful developments in ELECTRUNITE Stainless and Carbon Tubing for mechanical and pressure applications, "Inch-Marked®" E.M.T. and Conduit for electrical installations.

The ELECTRUNITE Line

"Inch-Marked" E.M.T... Electrical Metallic Tubing . . . light, strong steel tubing raceway to protect electrical wires against fire, moisture, and impact.

Mechanical Carbon Steel Tubing... made in a wide range of grades, sizes, and wall thicknesses to make all types of products lighter, stronger.

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Stainless Steel Tubing and Pipe in a full range of sizes, types and wall thicknesses for chemical and food processing equipment, and mechanical applications.

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At National, correct metallurgical composition, uniform casting and precision turning combine to provide maximum strength and satisfactory performance.

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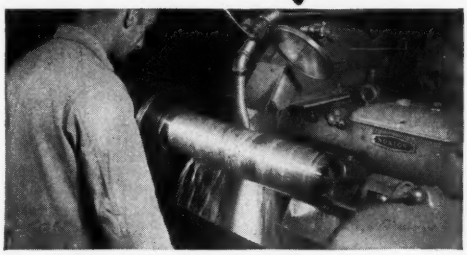
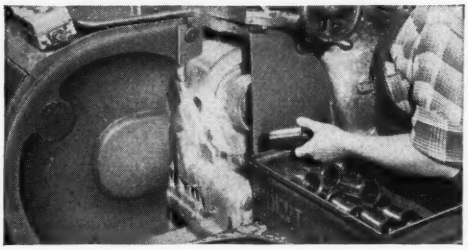
SPECIALISTS IN
IRON AND ALLOY IRON ROLLS AND CASTINGS

In Your Cylindrical or Centerless Grinding...



Grinding a large cylindrical part to exact tolerance and degree of finish. The Norton range of specifications enables you to select exactly the right wheel for work like this.



A plunge-cut grinding job to a shoulder on a centerless machine. Units being ground are textile machinery parts, for which wheels of Norton ALUNDUM* (fused alumina) in the correct grain size and grade, give best results.

Shaping a wheel by crush truing, with hardened steel crushing roll shown in raised position. Both Norton ALUNDUM and CRYSTOLON* wheels can be crush trued, to give excellent results in this rapidly growing method of grinding intricate O. D. contours.

HANDY ILLUSTRATED BOOKLET gives you the essential facts on cylindrical and centerless grinding and provides convenient selection charts. Ask your Norton Distributor for Form 2006. Or write direct for free copy. NORTON COMPANY, Worcester 6, Mass. Distributors in all principal cities.

It's easier to

GET MORE UNITS

per dressing • per hour per wheel

WITH NORTON O. D. GRINDING WHEELS

You want your cylindrical or centerless grinding wheels to deliver exactly the required tolerances and finish . . . in piece after piece . . . hour after hour . . . with a minimum of dressing or replacement.

With Norton wheels it's *easier* to get these results. Here are the reasons:

1. Norton Range of Specifications Covers All Your O. D. Jobs. Whatever your material or job specifications — in the complete line of Norton wheels for O.D. grinding you're sure to find the *one* wheel with the *right* combination of abrasive grain type and bond for top cutting performance and extra long wheel life — and Norton uniformity assures top performance in *every* wheel.

2. Norton Applicational Aid Covers Your Grinding Problems. In practically every case your Norton Distributor can quickly tell you which types of wheels you need. Backing him is the Norton Abrasive Engineer in your area. And behind both is the Norton technical staff, representing the resources and know-how of the world's largest manufacturer of abrasives.

3. Norton Stocks Cover Your Delivery Requirements. Your Norton Distributor keeps ample stocks of popular O.D. wheel types and sizes. Larger stocks are maintained in Norton warehouses in key cities throughout the country, and you can always count on prompt shipments from Norton Company's complete stocks in Worcester.

*Trade-Marks Reg. U. S. Pat. Off. and Foreign Countries

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FLEXIBLE HOSE LINES

WITH DETACHABLE, REUSABLE FITTINGS

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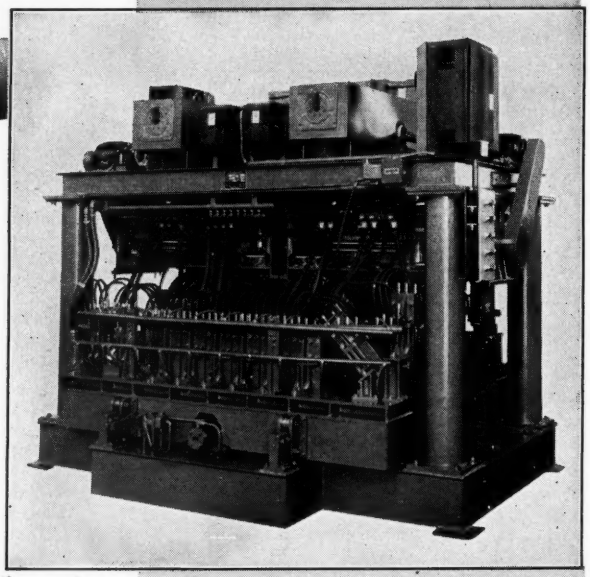

Save time, save money and reduce inventory by putting the "Aeroquip Idea" to work for you. With Aeroquip you make your own flexible hose assemblies by cutting bulk hose to desired lengths and attaching Aeroquip Reusable Fittings. Assembly can be accomplished quickly and easily right on the job. No special tools are required. No training is needed. Aeroquip high quality Flexible Hose Lines improve performance and reduce maintenance. They eliminate leaks due to vibration and operate dependably at extremely high or low temperatures. They are widely used for hydraulic fluid, water, air, lubricating oils, gas and Diesel fuels and many other fluids.

Always first
REG. TRADE MARK

B.D. check into this money saving idea—Joe

Aeroquip Flexible Hose Lines are used by most welding machine and by many machine tool builders, not only because of their superiority in performance, but also because they can be assembled with ordinary hand tools as required for each individual job.

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JACKSON, MICHIGAN

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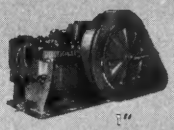
Our broad experience enables us to design and build a line of machines capable of standing up to the toughest forging assignments . . . whether plowshares or high explosive shells.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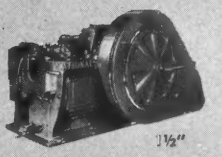
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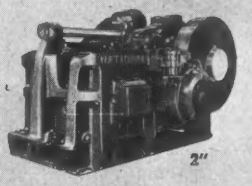
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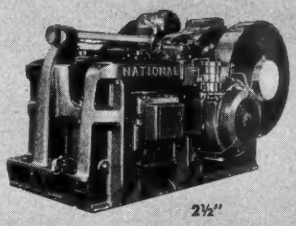

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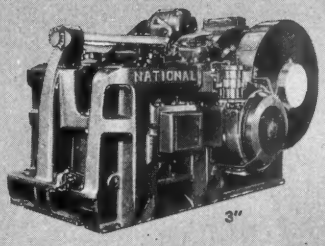

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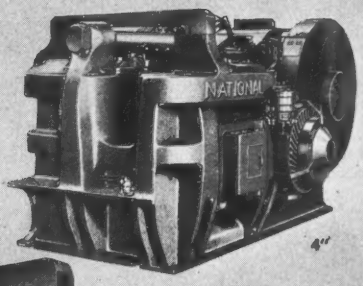

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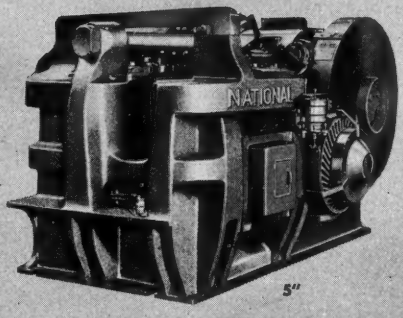

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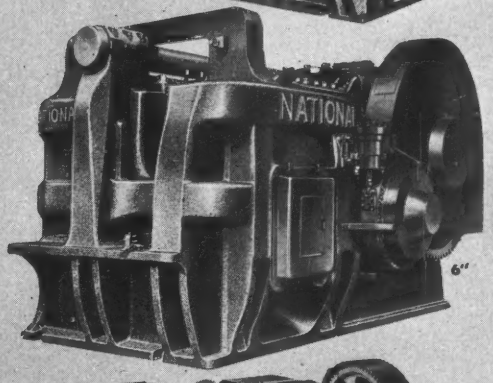

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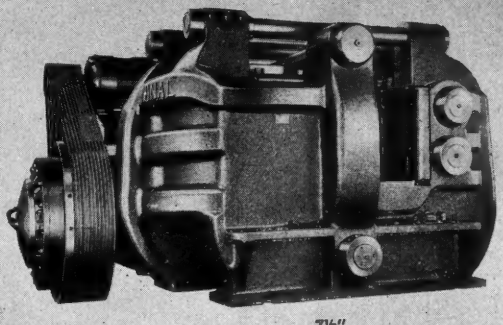
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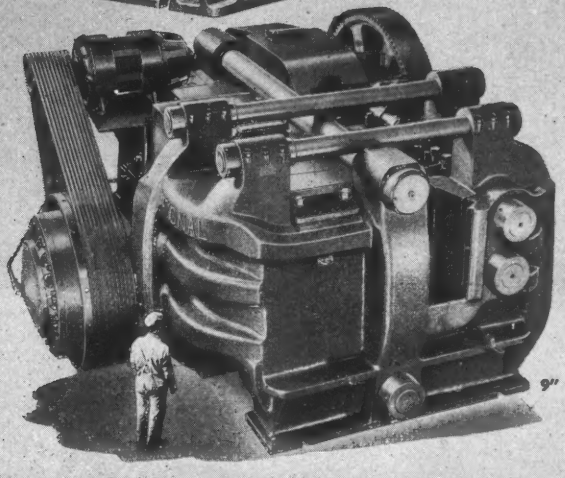
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The wheel has an entirely new design feature – an encircling rim of extra tough wear-resistant construction around the free-cutting face—which prevents the cutting edge from becoming rounded. Hard-to-reach corners can be accurately ground because the edge does not break down. U.S. Rubber's 89 years of abrasive experience enables their engineers to design, when necessary, and recommend the grinding wheel that will finish your job expertly and economically.

PRODUCT OF U.S.RUBBER SERVING THROUGH SCIENCE

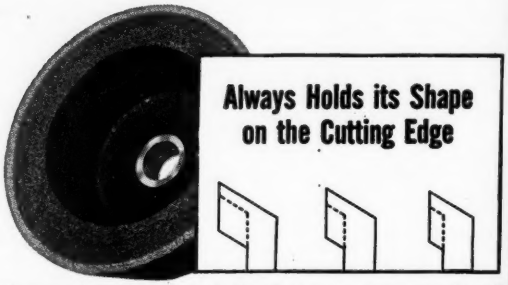

Diagram shows how the grinding face wears down evenly and the outer cutting edge remains sharp.

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MECHANICAL GOODS DIVISION • ROCKEFELLER CENTER, NEW YORK 20, N. Y.

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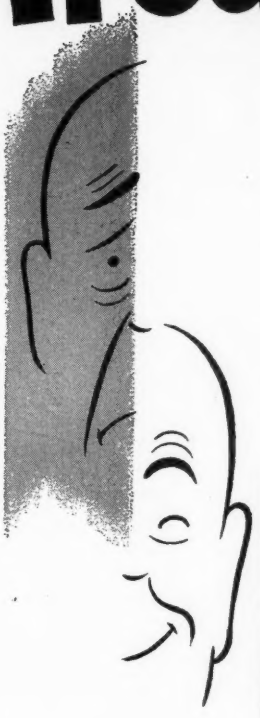

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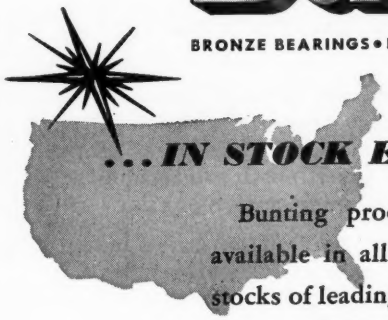

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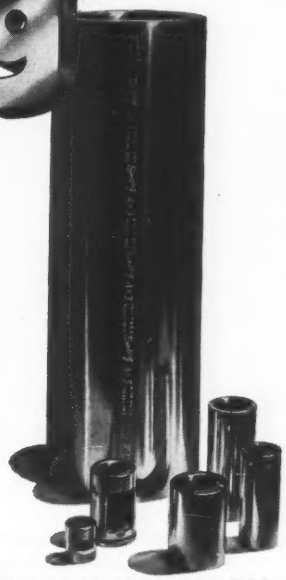

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COLD FINISHED BARS
make better parts

- Greater Uniformity
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- Minimum Distortion
- Longer Service Life
- New Low Unit Cost

SCRAP is vitally needed for Defense Steel . . . be sure your SCRAP goes back to the mills

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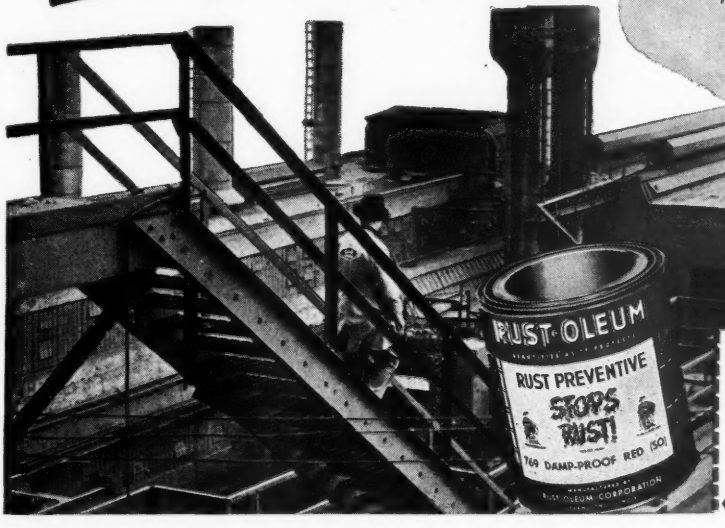
BEAUTIFY AS YOU PROTECT—ALL COLORS, ALUMINUM AND WHITE!

RUST-OLEUM may be applied directly over *rusted surfaces without removing all the rust!* Just remove rust scale and loose particles with wire brush and sharp scrapers... then apply by brush, dip, or spray. Costly sandblasting and chemical pre-cleaning are not usually required. Easy as that to cut your maintenance costs. Specify **RUST-OLEUM** to your painting contractor or architect for *every rustable* metal surface! Prompt delivery from Industrial Distributor stocks in principal cities.

RUST-OLEUM CORPORATION
2533 Oakton Street • Evanston, Illinois

FREE SURVEY: A **RUST-OLEUM** specialist will gladly survey your rust problems. He'll make specific tests and recommendations. No cost or obligation. See Sweets for complete catalog and nearest **RUST-OLEUM** distributor, or write for literature on your company letterhead.

Stopping Rust with RUST-OLEUM 769 D. P. Red Primer



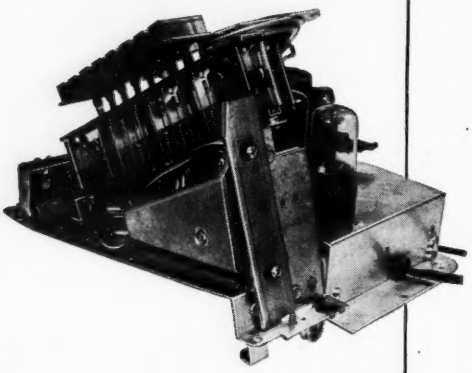
CLIP THIS TO YOUR LETTERHEAD
MAIL TO: RUST-OLEUM CORPORATION
2533 Oakton Street • Evanston, Illinois

- ☐ Have a Qualified Representative Call
- ☐ Full Details on Free Survey
- ☐ Complete Literature
- ☐ Nearest RUST-OLEUM Source

Look for this label — be sure it's genuine RUST-OLEUM

This man can show you . . .

How to pick up extra savings with *simpler* P-K assembly plus power driving

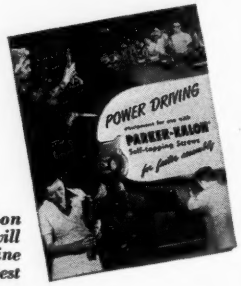


Portable electric drivers are used to speed assembly of this inter-office communication set, because mis-threading worries are eliminated. The 28 P-K Hex Head Type Z and Phillips Head Type Z Screws drive easily, set up securely, can be removed and replaced when necessary. Fastenings are made in 18 gauge CRS and aluminum die-casting.

Ask a P-K Assembly Engineer where you can take further advantage of power driving. Often, a switch to P-K Screws gives production a *double* lift. You save the time for needless tapping, bolting, riveting, or inserts in plastics. You also find that the *simpler* P-K method permits use of power driving to further speed assembly.

With the experience of more than a million applications to guide him, a P-K Assembly Engineer can quickly provide the answer to this, and other questions about making your assemblies better, faster, stronger, and at lower cost.

Today, more than ever, the P-K Assembly Engineer is a good man to have on your production team, helping you boost output and beat the squeeze on profits. He'll call at your request. Parker-Kalon Corporation, 200 Varick St., New York 14.



This Bulletin on Power Driving will help you determine which type is best for your work. Describes and illustrates the various basic types of electric, air-operated and impact tools, as well as the automatic hopper-fed machines for screw driving in common use. Also useful information on proper bit and socket selection. Free on request. Ask for Form 401.

DELIVERIES ARE BETTER
CHECK WITH P-K FIRST

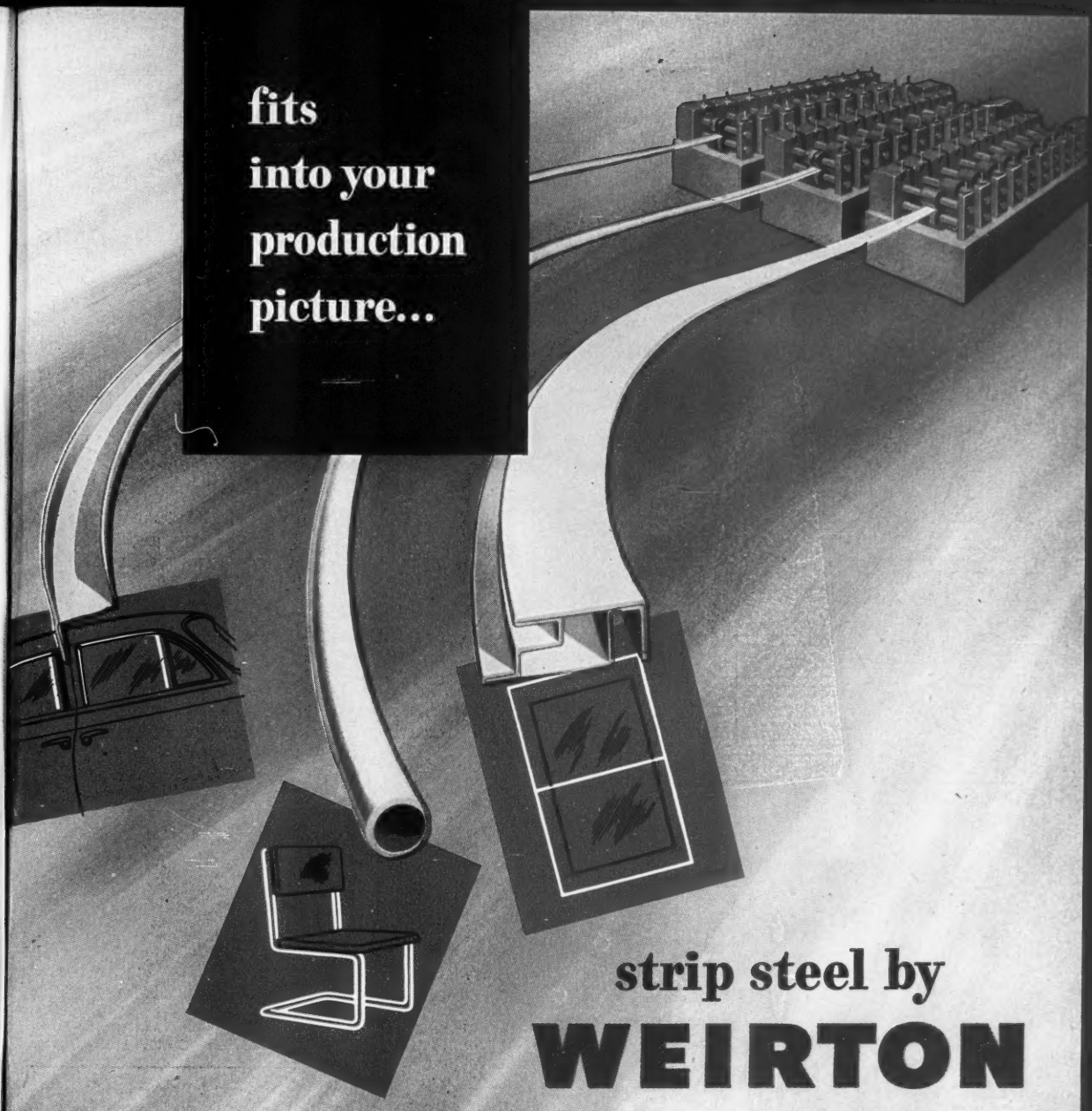
Your P-K DISTRIBUTOR *has good news. His stocks of P-K Screws are steadily improving. The size and type you need may now be readily available. Ask about it. Plan now to make your assemblies with the original, quality-controlled P-K Screws. Remember—"If it's P-K . . . it's O.K."*

P-K
TRADE MARK
REG. U.S. PAT. OFF.

PARKER-KALON®

The Original **SELF-TAPPING SCREWS**

FOR EVERY METAL AND PLASTIC ASSEMBLY



strip steel by WEIRTON

Cold-rolled strip steel is made by Weirton to satisfy the most exacting requirements of its users. Superior equipment and methods, along with complete control of materials from mine to finished strip, assure the remarkable uniformity for which Weirton is noted.

Weirton customers enjoy two important advantages—the uniform quality of Weirton steel, and the dependability of Weirton service. In short, Weirton makes good steel and gets it to you.

WEIRTON STEEL COMPANY
WEIRTON, WEST VIRGINIA

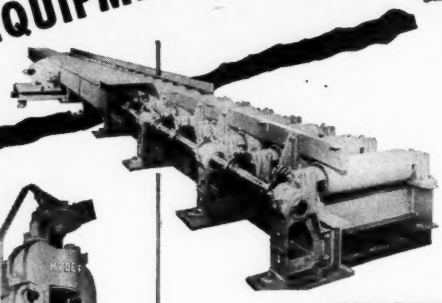
NATIONAL STEEL CORPORATION

Hyde Park ROLLS and ROLLING MILL EQUIPMENT

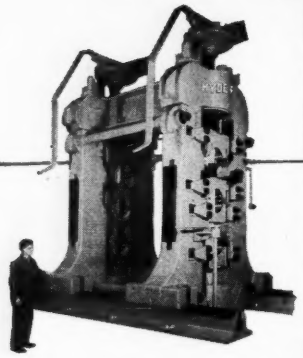
In many mills throughout the country Hyde Park Red Circle Rolls are daily giving top production, and achieving new endurance records.

The Hyde Park Red Circle is your assurance of quality and dependability. You will find it on the type and size of roll that will best serve your purpose.

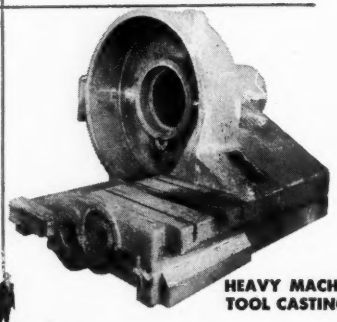
The same integrity of design and rugged construction are characteristic of all Hyde Park Rolling Mill Equipment.



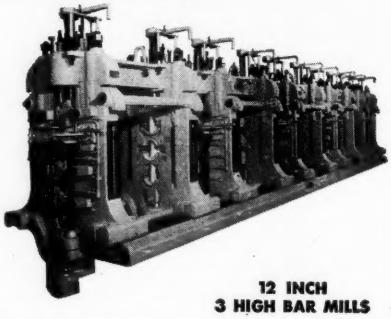
ROLLER TABLE



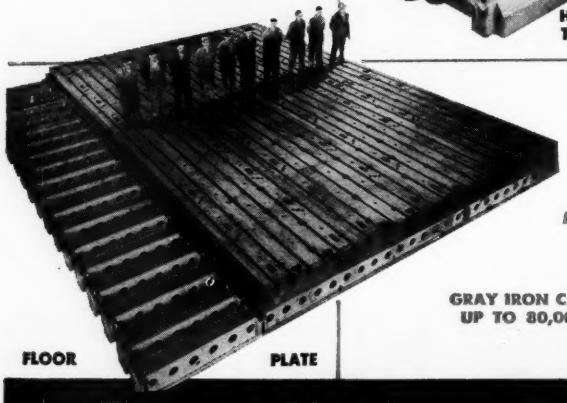
24 INCH
3 HIGH BAR MILL



HEAVY MACHINE
TOOL CASTING



12 INCH
3 HIGH BAR MILLS



FLOOR PLATE

GRAY IRON CASTINGS
UP TO 80,000 LBS.

ROLLS • Alloy Iron • Chilled • Sand

ROLLING MILL EQUIPMENT

- Bar Mills
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- Sheet and Strip Mills
- Pinion Stands
- Roller Tables
- Reduction Drives
- Stretcher Levellers
- Guillotine Shears
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- Roll Lathes
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- Pinion Housings
- Mill Housings
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- Lay-out Plates
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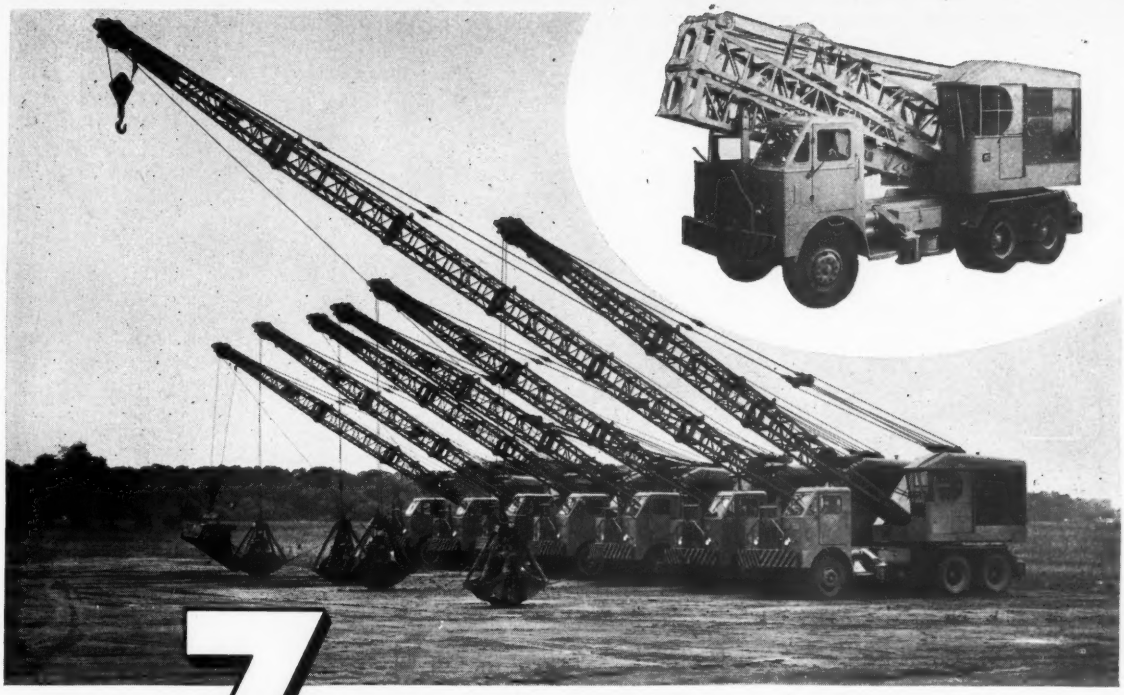
Hyde Park FOUNDRY & MACHINE CO.
HYDE PARK, WESTMORELAND COUNTY, PITTSBURGH DISTRICT, PA.



These 7 BYERS 20-ton cranes

mounted on rubber tired Crane Carriers

help build Fairless Works!

On new construction, maintenance or on 1,001 industrial material handling applications, Byers 20-ton cranes mounted on mobile *Crane Carrier* chasses are moving countless tons of materials daily. Somewhere, *today,* a Byers model 83-CC is doing the same kind of job that you need done at your plant. And they're doing every job with dispatch, economy and satisfaction, just as they are operating for Walsh-Perrini-Groves-Slattery on the new Benjamin F. Fairless mill for the U. S. Steel Corporation.

These machines were sold by the General Machine Parts Co., New York, and Hedge & Mattheis Company, Boston, Mass., franchised Byers distributors. Byers Cranes of this type are being specified by other large users everywhere.

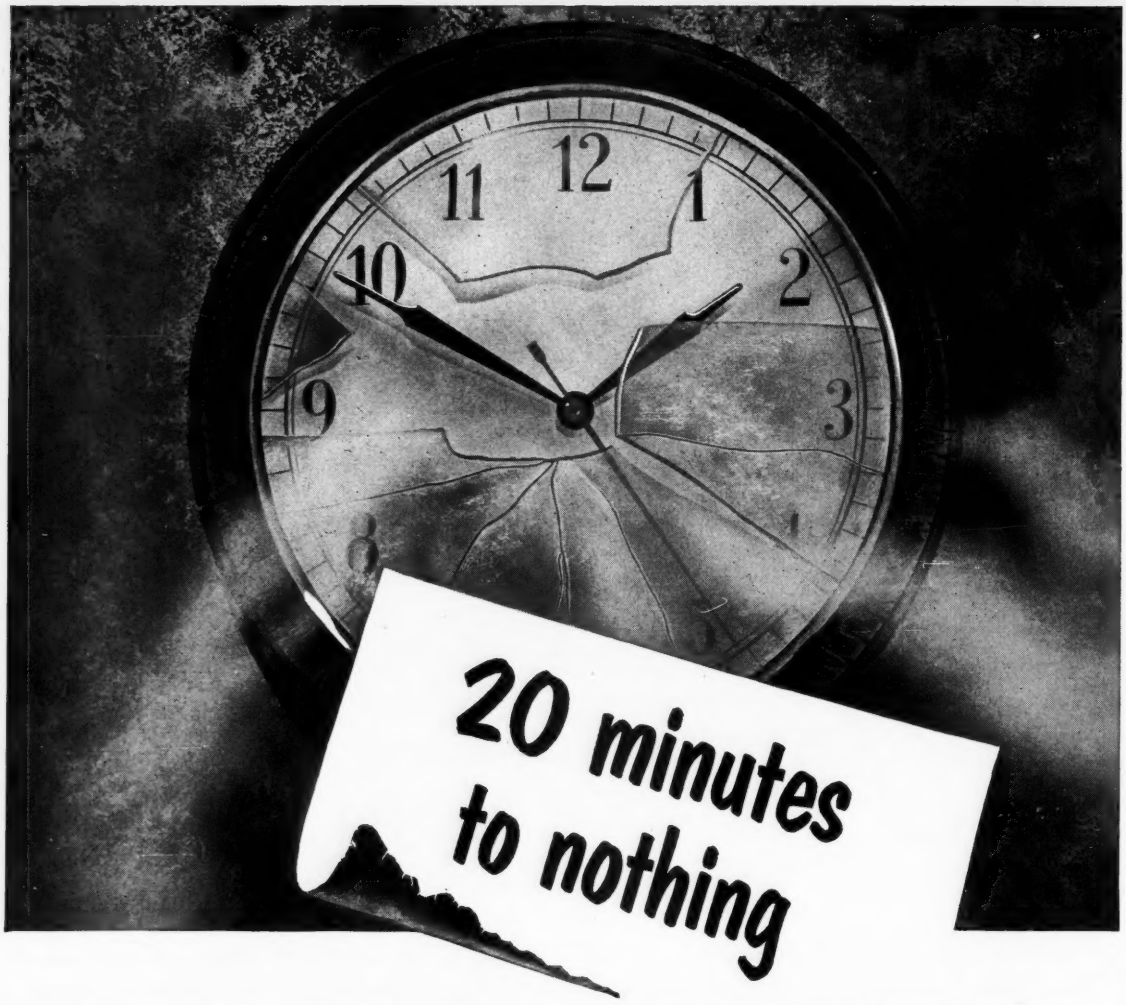
Why not suggest to your yard superintendent or materials handling engineer that he inquire today for complete specifications on the line of Byers industrial material handling cranes?

highlights of BYERS 83-CC

Safe lifting capacity, 40,000 lbs.
Standard crane boom . . 30 ft.
Boom extensions to any practical length
Power . . . . . gas or diesel
Accessories to suit your requirements

BYERS CRANES SHOVELS

THE BYERS MACHINE CO., RAVENNA, OHIO *Distributors throughout the World!*



You could know the plant... 20 years of steady growth ...20 years of work, brains and money...then in 20 minutes a little fire got away and reduced it all to nothing.

But, your larger size fire hazards can be protected very efficiently at a reasonable cost, thanks to C-O-TWO Low Pressure Carbon Dioxide Type Fire Extinguishing Systems. Simple piping, running from one centrally located storage tank, instantly transports clean, non-damaging, non-conducting carbon dioxide anywhere in the plant area...to flammable liquids, electrical equipment, storage spaces, manufacturing processes and record vaults. Fire at any protected location is extinguished in seconds with an absolute minimum of expense and interruption.

Flexibility is the keynote with these C-O-TWO Fire Extinguishing Systems . . . the low pressure carbon dioxide storage tanks range in capacities from one to fifty tons . . . discharge facilities can either be manual mechanical, manual electric, automatic mechanical, automatic electric or a combination of these . . . especially installed to fit your particular needs. Future plant expansion is easily and economically provided for by initially installing an oversized low pressure carbon dioxide storage tank and adding the supplementary discharge facilities at a later date.

Whether it's fire detecting or fire extinguishing . . . portables or built-in systems . . . C-O-TWO means experienced engineering that assures you of the best type equipment for the particular fire hazard concerned.

WHEN BUSINESS STOPS . . . INCOME STOPS!

Don't take chances with your investment. Secure the benefits of highly efficient fire protection engineering today . . . our extensive experience over the years is at your disposal without obligation. Get the facts now!

C-O-TWO

MANUFACTURERS OF APPROVED FIRE PROTECTION EQUIPMENT

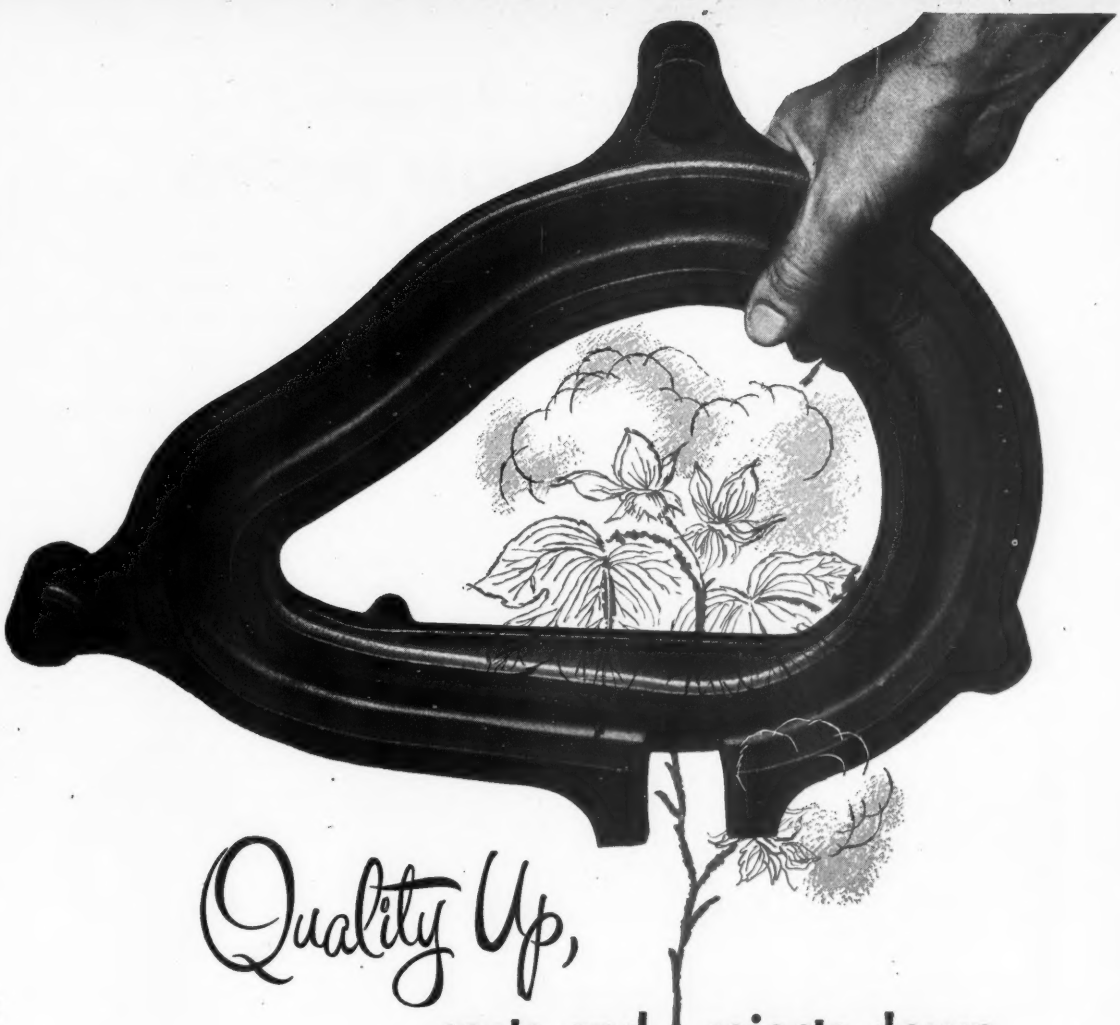
Squeez-Grip Carbon Dioxide Type Fire Extinguishers
Dry Chemical Type Fire Extinguishers
Built-In High Pressure and Low Pressure Carbon Dioxide Type Fire Extinguishing Systems
Built-In Smoke and Heat Fire Detecting Systems

C-O-TWO FIRE EQUIPMENT COMPANY
NEWARK 1 • NEW JERSEY

C-O-TWO FIRE EQUIPMENT OF CANADA, LTD. • TORONTO 8 • ONTARIO

Sales and Service in the Principal Cities of United States and Canada

AFFILIATED WITH PYRENE MANUFACTURING COMPANY



Quality Up,

costs and rejects down

WITH CRUCIBLE TOOL STEEL CASTINGS

The steel part shown above used to be a production headache. A cam for a cotton picking machine, it was originally flame cut from SAE 8730 boiler plate, machined and heat treated. Other difficult steps included end-milling and finish-grinding the cam track. Rejections were high, because the cam often warped during heat treatment.

The problem was solved by casting the cam in Airkool®, a Crucible air-hardening tool steel. When the customer receives the casting from Crucible, all he has to do is finish it, mill the cam track and heat treat. He doesn't have to finish grind — Airkool is non-deforming when properly hardened and tempered. Machining costs are way down and quality is up, since Airkool resists wear far better than the low alloy steel from which the part used to be made.

Crucible's casting facilities often make it possible to use wear- and abrasion-resisting tool steel for complicated machine parts. We may be able to help you just as we helped the cotton picking machine manufacturer. Get in touch with Crucible today!

CRUCIBLE

52 years of Fine steelmaking

first name in special purpose steels

SAND CASTINGS

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

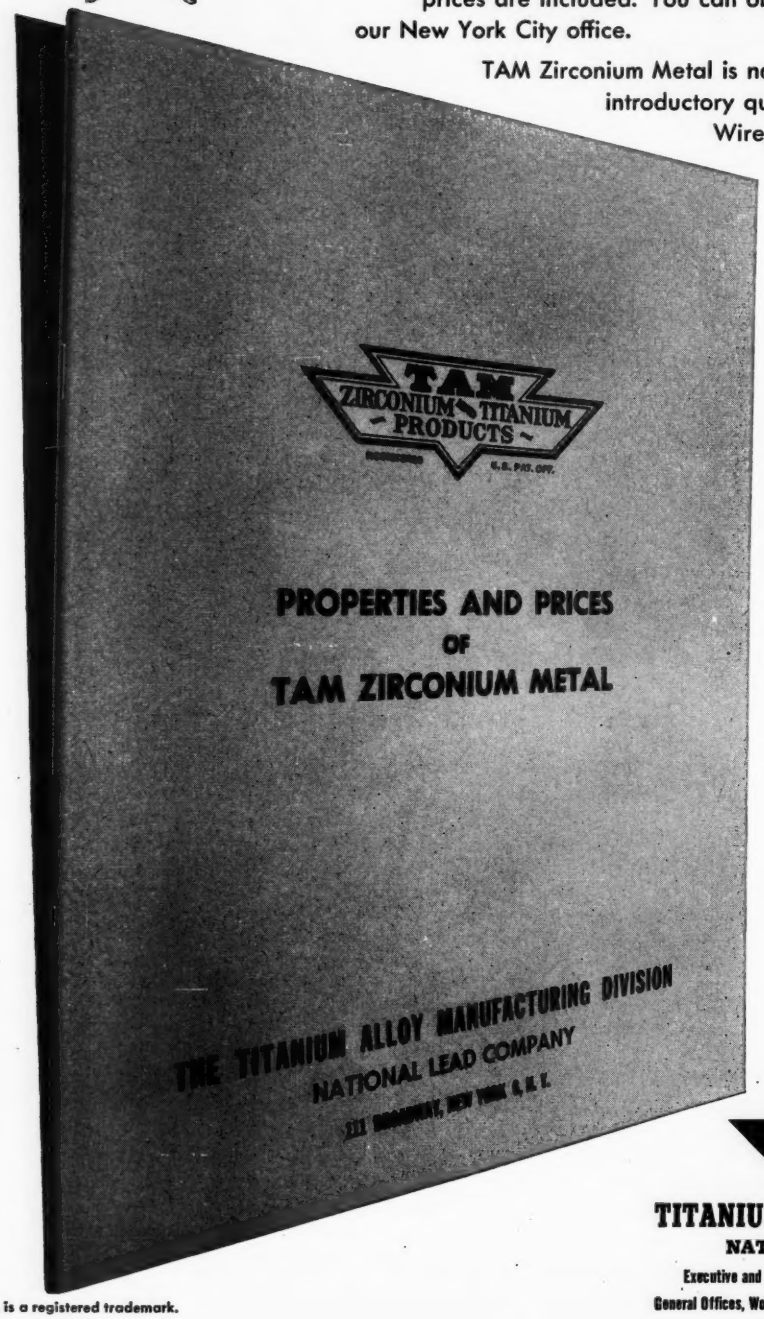
REX HIGH SPEED • TOOL • REZISTAL STAINLESS • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS

Excellent Corrosion Resistance of

ZIRCONIUM METAL

points up the advisability of a thorough investigation. And, this new booklet gives you many of the answers. Physical, mechanical and chemical properties are charted and detailed. Present and potential uses, supply and prices are included. You can obtain your copy by writing our New York City office.

TAM Zirconium Metal is now available, in limited introductory quantities of Bars, Rods, Sheets, Wire, Sponge and Briquettes.



TAM
PRODUCTS
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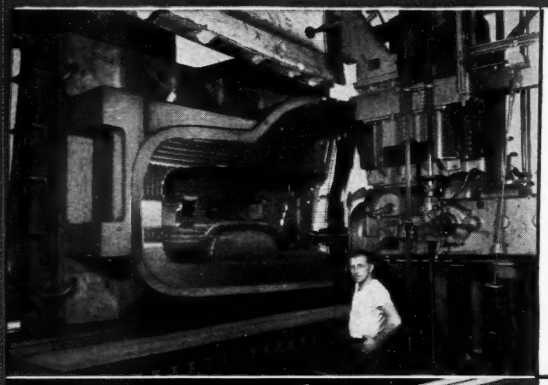
TITANIUM ALLOY MFG. DIVISION
NATIONAL LEAD COMPANY
Executive and Sales Offices: 111 BROADWAY, NEW YORK CITY
General Offices, Works and Research Laboratories: NIAGARA FALLS, N. Y.

*TAM is a registered trademark.

YOUNGSTOWN ALLOY CASTING CORP., • YOUNGSTOWN, O.

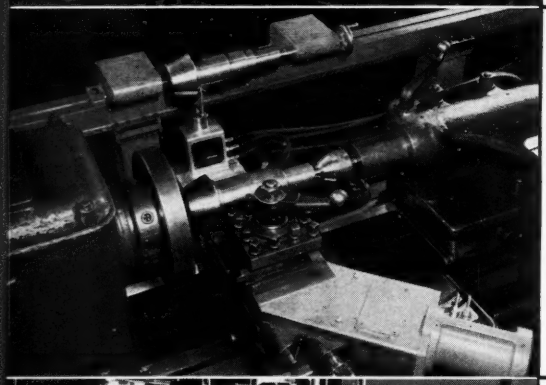
ROLLING MILLS: bar, hoop, strip, shape mill guides, and rollers. SEAMLESS TUBE MILLS: guide shoes, rolling mill plugs and rolls, piercer points, etc. ELECTRIC WELD TUBE MILL: forming rolls, planishing rolls, tool holders, etc. • STRAIGHTENING MACHINE GUIDES • HEAT RESISTING CASTINGS

Bring your standard machines up-to-date with Turchan HYDRAULIC DUPLICATORS



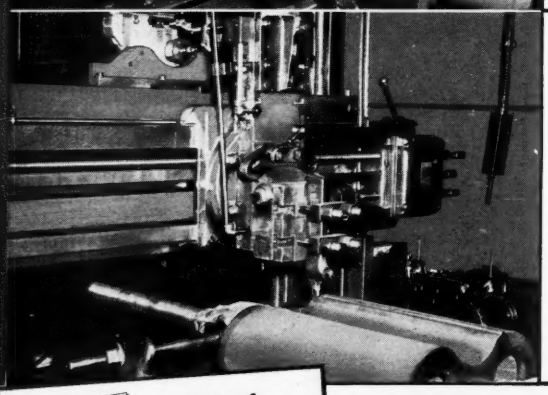
MILLING...

The Turchan Follower attachment will transform those difficult tasks to simple push-button operation on your standard horizontal or vertical millers. Irregular profiles and contours; machining of dies, forms and moulds are achieved automatically. Hydraulically controlled cutting tools reproduce directly in metal, the exact dimensions of the model or template. No costly form tools or skilled help necessary. Close accuracies and extremely fine surface finish are cost-cutting features that save rejects. Turchan users report savings of 80% to 600% over old methods.



TURNING...

Thousands of lathes in shops all over America, are increasing efficiency and speeding production with Turchan duplicators. The single attachment is pictured machining a stepped shaft. The Turchan replaces the regular cross slide; operates at 45° angle, taking uninterrupted cuts over the work. Square or tapered shoulders, radii, grooves, bevels and undercuts, as well as facing, are all taken in stride to accuracies of .001". There is also a Turchan *dual 45°* lathe attachment which actually doubles tool approach to the work. Any size or make of conventional lathe can be Turchan equipped.



PLANING...

Standard planers equipped with the Turchan will duplicate irregular shapes, such as this blower section as readily as straight work. Contours are obtained automatically, with precision results. After job set-up, which is greatly simplified with the Turchan, little more than loading and unloading the work need be done. Once again skilled help is not required, yet production multiplies rapidly. Turchan Followers are also available for ordinary shapers and grinders. The attachment in no way interferes with the conventional controls of the machine tool. "Turn to Turchan to cut cost."

Write for New Catalog!

Tells how to get more and better work from your present machines, without skilled help and special tools.

GET AN ESTIMATE: Send a sketch and specifications of any job. Give make of machine. We'll show you how to produce it better, faster, at lower cost.

Turchan FOLLOWER MACHINE COMPANY

8259 LIVERNOIS AVENUE — DETROIT 4, MICH.

HERE'S YOUR PROOF OF . . . .

DRAVO *Counterflo* HEATER VERSATILITY!

get these FREE case studies now!

Detailed information and photographs show how heaters can be adapted for tempering make-up air . . . or how de-fogging of a plant may be accomplished using Dravo Heaters. These case studies give you proof of Dravo Heater versatility, and they're yours for the asking.

DRAVO HEATERS OFFER YOU:

LOW INITIAL COST—Users report 30% to 60% savings over "wet-type" systems.

EASY INSTALLATION—Need only fuel, exhaust and electrical connections . . . no ductwork.

LOW OPERATING COST—Direct-fired . . . burn gas or oil . . . readily converted . . . minimum efficiency 80%.

AUTOMATIC OPERATION—On-off or modulating controls . . . no constant attention needed.

LONG SERVICE LIFE, LOW MAINTENANCE—Stainless steel combustion chamber eliminates refractory lining.

SAFETY—Approved by American Gas Association, listed by Underwriters' Laboratories, Inc.; Dravo standardized safety control circuit accepted by Factory Mutual Engineering Division.

MOBILITY—Can be moved to any location.

FLEXIBILITY—When floor space is limited, can be wall-hung or suspended from trusses in any position.

DRAVO HEATERS SOLVE HEATING PROBLEMS IN THESE INSTALLATIONS, TOO:

- **PROCESS DRYING AND HEAT CURING**—where moisture content must be controlled or removed from air, and temperature regulated to meet production needs.
- **HEATING AND VENTILATING STORES, SCHOOLS, AUDITORIUMS, AND LARGE BUILDING AREAS**—where quick, automatically controlled, low-cost heating is desired.
- **TEMPORARY HEATING**—where comfort heat is necessary during building construction or to keep ground temperature above freezing in winter.

FOR FREE CASE STUDIES OF INTEREST TO YOU

MAIL THIS COUPON TODAY . . .

(Case Study sheets are 8½" x 11", punched for binder or convenient filing.)

HEATING DEPARTMENT, DRAVO CORPORATION
Dravo Building, Fifth and Liberty Avenues
Pittsburgh 22, Pa.

Please send me the following case studies FREE:

- ☐ Process drying and heat curing
- ☐ Space heating large buildings
- ☐ Tempering make-up air
- ☐ Temporary heating
- ☐ Stores, schools and auditoriums
- ☐ Please have a representative call.

Name_____ Title_____

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When writing ask for Bulletin DE-52

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CORPORATION

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ANNOUNCING! COMPLETE QUALITY CONTROL with FINKL'S *OWN* ELECTRIC FURNACE STEELS

These NEW twin electric furnaces for making high quality steels are the most modern installation in the country and are housed in a new building complete with up-to-the-minute metallurgical facilities.

The advantage of making the steels for your forgings and die blocks is obvious — quality is our paramount concern. The analysis is assured with the speed and accuracy of a direct reading spectrometer. Temperatures of the molten bath are determined by immersion pyrometers. *Nothing is left to chance.*

Now with this great new advantage of controlling the quality of the steel added to the craftsmanship of Finkl personnel in forging, heat treating, machining and testing, we are proud and pleased that we can serve you with the highest quality die blocks and forgings available today.

A. Finkl & Sons Co.

2011 SOUTHPORT AVENUE • CHICAGO 14

FORGINGS • DIE BLOCKS • ELECTRIC FURNACE STEELS

what's your time estimate on this job?

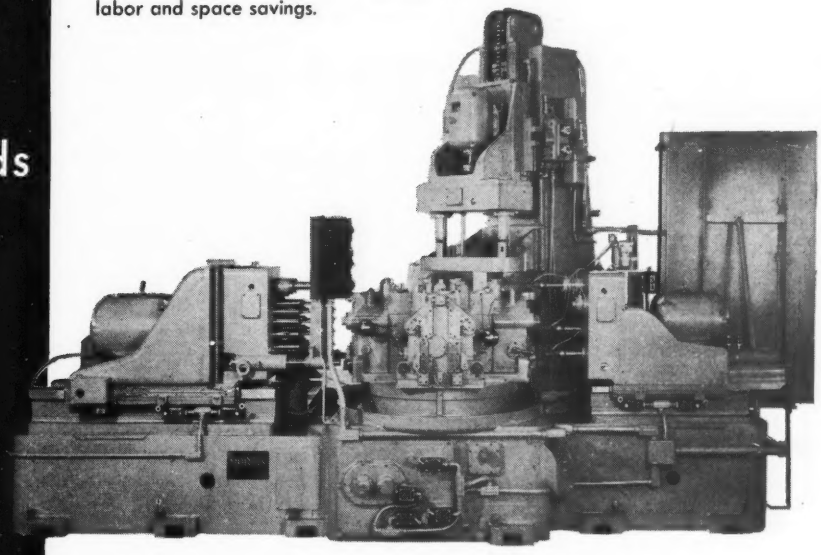
DRILL	19	HOLES
ROUGH BORE	2	HOLES
FINISH BORE	1	HOLE
CHAMFER	7	HOLES
REAM	1	HOLE
TAP	6	HOLES

Morris MOR-SPEED

Finishes One Part Every 33 Seconds

Machining a front cylinder cover for a popular make automobile engine, this four-way MORRIS Machine performs a two-cycle operation, and is production rated at 110 parts per hour at 100% efficiency. A total of 34 spindles do the operations listed above.

If your work requires numerous drilling, reaming, tapping and boring operations on a mass production basis, consult MORRIS Engineers. They will gladly show you case history proof of time, money, labor and space savings.



"A Better Product at Less Cost with PRECISION PLUS PRODUCTION."

Builders of MOR-SPEED Line

Morris

THE MORRIS MACHINE TOOL COMPANY
941 HARRIET STREET CINCINNATI 3, OHIO

Drilling a hidden bull's-eye

...more than a mile underground

Deadeye Dick was a poor marksman, compared to Driller Dan. For the boss tool pusher on a modern drilling rig can hit a target a mile distant, underground, and *'round a bend!*

How does he do it? By using a compass and camera. These, plus a ton – more or less – of drilling tools that enable the compass-camera to tell the truth.

There's no great trick to drilling a hole off center. But to point it where you want, and do it quickly, is something else again.

Before the compass-camera could be lowered for a snapshot, the whole string of tools first had to be pulled out. That was to avoid the effect of magnetism, and it took time. Plenty of time.

Drilling costs can run as much as $5,000 a day. So, someone suggested, why not design a drill collar that *wouldn't* have to be pulled, because it couldn't deflect the compass needle? Why not indeed?

All you needed was to produce a piece of oil well equipment 15 to 22 feet long, about 7 inches in diameter, and weighing in the general neighborhood of a ton. The metal must dampen completely the magnetic field of the drill string and thus enable you to obtain a true magnetic compass reading.

And in addition, this drill collar must provide the rugged mechanical properties called for by rotary rig drilling.

The answer? "K" Monel, one of the heat-treatable, high-strength Inco Nickel Alloys.

Have You a Metal Problem?

Some problems are more *immediate* than others. Some must be resolved tomorrow; some, perhaps, can wait until materials like the Inco Nickel Alloys are readily available again to anyone who wants them.

Whatever your particular problem, our staff of metal specialists is ready to work with you right now to find some metal – whether Inco Nickel Alloy or not – that will help you solve your toughest problem. You can start them working for you by setting down the facts they need to study. Then mail the outline to The International Nickel Company, Inco Nickel Alloys Dept., 67 Wall Street, New York 5, N. Y.

THE INTERNATIONAL NICKEL COMPANY, INC.

Nickel Alloys

Monel® • "R"® Monel • "K"® Monel
"KR"® Monel • "S"® Monel • Nickel
Low Carbon Nickel • Duranickel
Inconel® • Inconel "X"® • Incoloy®
Nimonics

Photograph courtesy of Standard Oil Company (N. J.)

September 22, 1952

Royalty Is the Issue

At the very beginning of coal negotiations, John L. Lewis demanded that northern soft coal mine operators increase their royalty payments 20 cents a ton to 50 cents and that they pay time and a half for the fourth day's work and double time for the fifth. The United Mine Workers' chief won the issue on royalties from the anthracite owners in a temporary agreement that will prevent a strike but that leaves the question of wage rates open, presumably until the pattern can be determined for bituminous miners.

Mr. Paley Speaks

Unless materials shortages are checked, they could cause a slowing of economic growth. So says William S. Paley, chairman of the President's Materials Policy Commission. To solve the problem, he advocates more liberal laws to encourage domestic mining and exploration, greater development of new materials and energy sources such as the sun and the atom and more imports from abroad on mutually advantageous terms. That last suggestion involves the reduction or elimination of import duties.

For Better Tax Depreciation

Watch for a revival in a drive to get the government to reform its tax depreciation policies. The fast amortization rules quieted the reformers for a while, but now five-year write-offs are becoming fewer and fewer. In the first three weeks of August, the rate of project approvals for fast amortization fell below $100 million a week for the first time since the inception of the program. Currently, project approvals are running at less than $50 million a week.

After Defense Buildup, What?

About one-third of the nation's total business activity now springs from the defense buildup. Before the Korean War only about 7 to 10 per cent of business arose from national security spending. What would happen if defense expenditures were to decline or be stretched out over a longer period? They won't be stretched out much further, administration people now indicate (p. 86), but they'll have to decline or end sometime. With that in mind, Commerce Secretary Charles Sawyer will soon create an Office of Distribution as a unit of its new Bureau of Production & Distribution to be set up later this year. That office will study what needs to be done to assure a strong economy when the defense program loses speed—during 1955 and later.

Broaching the Problem

Look for new efforts to speed up production and deliveries on broaches, especially for the jet engine program. Delivery on broaches for the engines now takes 30 weeks, 16 weeks for other types. A government survey claims that $45 million worth of broaches could

Production-Engineering News—p. 109 *The Market Outlook—p. 215*

be turned out a year if plants making them worked on a three-shift basis. Only about 57 per cent of that is actually being turned out—because tool builders can't find the personnel to man three shifts and because they're busy on other types of equipment equally urgent.

Restrictive

Complaints are rising from steel users that they can't live with the current 30-day steel inventory rules. On many products, consumers historically kept stocks of much longer than a month's supply. In one move aimed at helping the situation, NPA has just come out with a new interpretation which rules that material in process is not considered a part of inventory.

Railroads Study Rates

Railroads are quietly studying their rates to try to get more revenue. The summer's boosts weren't enough. Things like this are happening: Culvert, once classified as a steel product, is taken out of that category with the result that the tariff is hiked more than 200 per cent. More such shifts on other items can be expected. That action may boomerang, because in the case of culvert the change has brought a turmoil in the industry, which may be forced to use less rail transportation and end up bringing less revenue than ever to railroads.

Back Pay Awards Pile Up

Millions of dollars in potential back pay awards are piling up against employers because it takes so long to obtain a decision from the National Labor Relations Board. On the average, according to Commerce Clearing House, more than 400 days are taken to process an unfair labor practice case. The delays are due to an overloaded calendar and do not reflect upon NLRB.

What Industry Is Doing

Two or three months will probably elapse before the GM-UAW debate on the contract is finally resolved . . . Commerce Secretary Sawyer wants no new excess profits tax . . . GE and the Independent United Electrical Workers agreed on a wage boost ranging from 7½ to 13 cents, but the offer hasn't been accepted by the CIO's IUE, the representative in about 60 GE plants . . . Watch for a change in NPA's alloying metal order, M-80, which will mean allocations scheduled on a quarterly rather than a single month basis . . . Hudson Motor Car Co.'s entry in the small car field will look like a Ford, weigh a little more than a Henry J and cost about as much as a Chevrolet or Plymouth.

Straws in the Wind

A record 56 million tons of ingots may be produced in the next six months (p. 81) . . . Steelmaking capacity will be up 7 million tons on an annual rate by yearend with blast furnace and coke capacities rising, too (p. 82) . . . Delivery dates for components improve, especially where tooling problems can be solved (p. 83) . . . OPS still juggles the ball of wage increases in the steel price pass-through (p. 84) . . . Spotlight on one of industry's workhorses, gray iron castings (p. 85) . . . Cyclical recessions, the machine tool industry's old problem, gets new attention (p. 92).

RUGGED!

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Weight of Coils—3000# to 50000#
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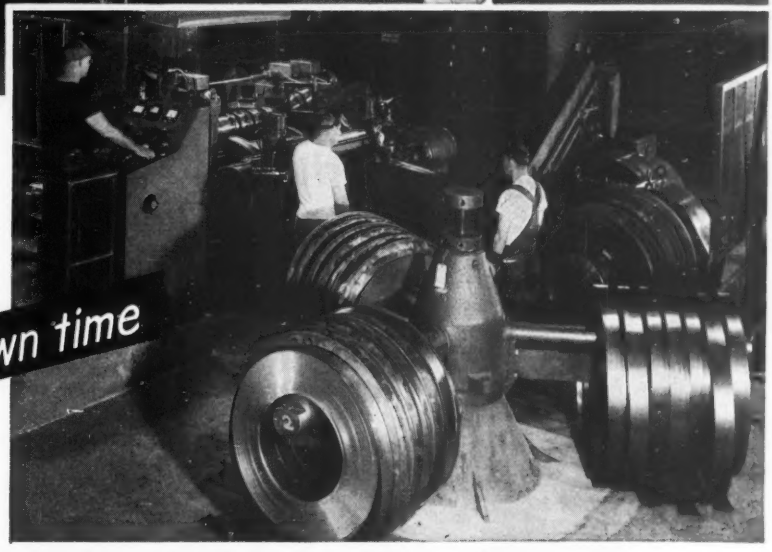

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STAMCO, Inc., New Bremen, Ohio

EC&M Booster Controller used with No. 6, Type SW, 65-inch diameter magnet shown at the right.

New EC&M

Booster Control

Speeds Material Handling...

LIFTS A BIGGER LOAD Faster from the Pile—
Discharges it Quickly, too.

EC&M Booster Controllers are supplied with the Type DM "Lift-Drop" (lever-type) Master Switch. The transition from "lifting-voltage" to "carrying-voltage" can be automatically governed by a time-delayed contactor on the Controller-panel, or by manual control of the contactor from a separately mounted push button or foot switch.

Many magnet users are now selecting these new EC&M Booster Controllers to gather a bigger load from the pile. They also get faster magnet operation by a quicker build-up of the magnet-flux under the booster system of operation. When leaving the pile, the load is carned at reduced voltage to the point of discharge.

EC&M Booster Controllers are designed for use with generators capable of delivering a full load voltage of 285-300 volts so that the magnet-terminal voltage will be about 275 volts with the magnet energized. The change of the magnet voltage from the "lifting-value" to the "carrying-value" can be by generator field-weakening or by a series resistor in the magnet circuit: either of which may be controlled automatically, or manually by the operator.

EC&M Booster Magnet Controllers retain the *adjustable* feature for quick release of the load. These controllers can help speed operation and cut costs on new or existing magnet installations. Investigate them today.

WRITE FOR BULLETIN 900

THE ELECTRIC CONTROLLER & MFG. CO.

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A Dream Coming True

Only once or twice in a blue moon are steelmakers blessed with the opportunity to plan and build integrated facilities for producing steel—from ore to finished product—almost completely to their heart's desire. Right now enthusiastic engineering and operating men of United States Steel—whose average age is amazingly low—are cashing in on one of those rare opportunities. On a level plot of almost 4000 acres near Morrisville, Pa., on the bank of the Delaware river, they are feverishly working toward the day—not too many weeks hence—when the ultra modern Fairless Works will be placed in operation and their dream of dreams will be fulfilled.

Initially the Fairless project will consist of two blast furnaces, nine open hearths and rolling mill and finishing facilities for hot- and cold-rolled sheet, tin mill products, bars and pipe. However, the layout provides for trebling or quadrupling these units if necessary.

Throughout all departments of the new works are equipment and processes that are either brand new or are contemporary with the best practice in existing plants. Most noticeable features are the accent on space; the lavish use of mechanical handling devices to move raw, semifinished and finished materials; new methods of conserving heat; emphasis on good housekeeping with electrostatic precipitators to minimize air pollution from open-hearth stacks; provision for oxygen enrichment of open-hearth flames; a line for annealing strip for tin plate in the unbelievable time of three minutes; and more power and higher speeds for finishing mills than ever have been attained previously.

These and other marvels of the Fairless Works reflect unlimited credit not only upon United States Steel and its personnel but also upon the hundreds of engineering, construction, equipment manufacturing and supply concerns which participated in the giant undertaking. It is a fine tribute to America's engineering skills and resources.

The editors of this publication are grateful for the opportunity to present highlights of the Fairless Works in this issue as an appropriate prelude to the approaching annual convention and exposition of the Association of Iron and Steel Engineers in Cleveland, Sept. 30-Oct. 3.

E. C. Shaner

EDITOR-IN-CHIEF

HOW MUCH CAPACITY? Sometime next year this nation will have available 120 million tons of steel ingot capacity. How will this compare with the foreseeable demand for steel?

For answers to this question the editors of this publication went to leaders of five steel producing companies, a government economist and a research director of the largest labor union in iron and steel. Their opinions, as

set forth in this issue (pp. 114-117), deserve the attention of all persons interested in the production, distribution and use of steel.

Four of the steelmakers believe the 120 million tons of capacity is more than enough for present needs. Their estimates as to when steel requirements will match this capacity range from the late fifties to the early sixties. The fifth steelmaker, confining his estimate to conditions in the Pacific states, declares a substantial increase of capacity in that area is required. The government economist and the union research director agree that 120 million tons is about right for 1953, but believe that capacity must be increased substantially before 1960.

It is significant that while the attitudes of industry, government and union toward expansion for the long-term future differ in degree, they are in closer agreement as to short-term requirements than at any time in a decade.

* * *

HOW THEY RATE ISSUES: A CIO Political Action Association in a large midwest industrial center polled CIO members on their choice for President of the United States and on their rating of campaign issues. As was to be expected, the results show that a large majority favors Stevenson over Eisenhower. More than 85 per cent of members of the steelworkers union who voted indicated a preference for Stevenson, whereas 51 per cent of the CIO newspaper guild favored Eisenhower. The over-all average for all CIO unions was 78.2 per cent for Stevenson, 19.4 per cent for Eisenhower and 2.4 per cent undecided.

A significant clue to the thinking of CIO members is found in their rating of campaign issues. The cost of living is voted the No. 1 issue by a commanding margin. Others, in order of importance, are Korea, taxes, unemployment compensation, Taft-Hartley law, workmen's compensation, rent control, safety on job, foreign policy, FEPC, corruption and socialism. Note particularly how far down the list are T-H, corruption and socialism!

* * *

SCRAP DANGER PASSES: Not too long ago the nation was faced by the threat of a serious shortage of scrap iron and steel. Fortunately that danger has passed. Today scrap material is in good supply (p.88) and should remain so for some time to come. Credit for this happy state of affairs should go chiefly to tens of thousands of persons who pitched into the campaign to get out scrap when acute shortages were only a few weeks away. Also we cannot ignore the fact that the idleness of most of the steel industry for nearly two months assisted substantially in increasing the backlog of scrap. Although the danger of a shortage next spring is remote, the machinery of scrap drive collections is being moth-balled for future use—which is wise.

* * *

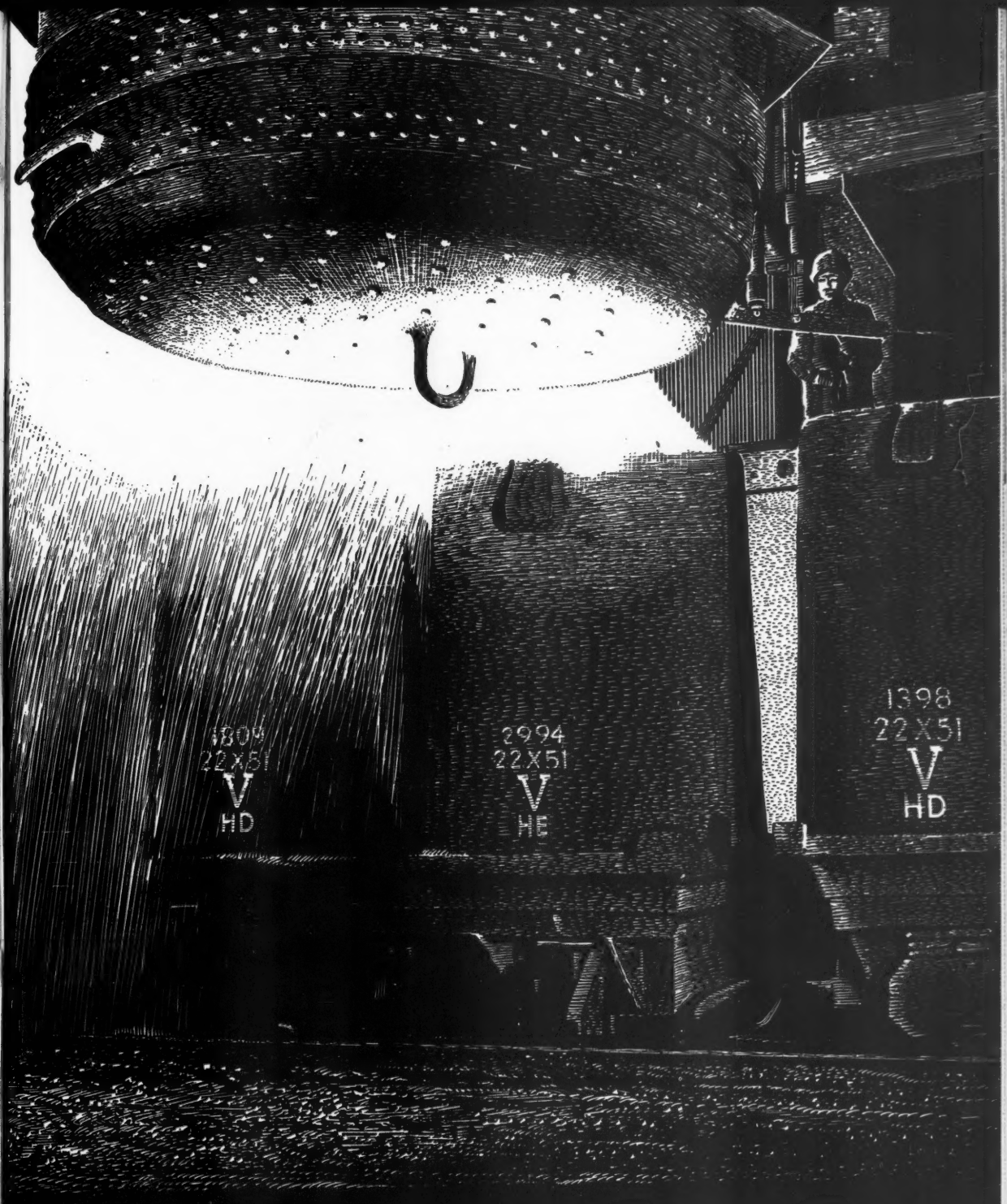
RE FRINGE BENEFITS: In recent years most companies in the metalworking industries have granted many so-called fringe benefits to employees under the reasoning that good employer-employee relations spurs production and is profitable. A survey by the Chamber of Commerce of the United States (p. 84) shows that the cost of these fringe benefits, or "hidden payroll costs," in 1951 mounted to an alltime high of $644 per employee.

Translating these figures into national totals, we arrive at an approximate calculation that "hidden payroll costs" total almost $25 billion a year. Reduced to understandable arithmetic, this is 31.5 cents per payroll hour. In a sellers' market, the consumer foots this bill. In a buyers' market the employee suffers from unemployment and the employer is penalized by lower profits or a loss.

* * *

THIS IS TOUGH PROBLEM: Machine tool builders are producing at a rate of $100 million a month, while net new business is coming in at $75 million a month. While the backlog of orders will keep some plants going for a long time, more than three-quarters of the 325 machine tool builders in the country will be operating at less than capacity by next Mar. 31.

These figures (p. 92) point up a serious problem. How are we going to work out an equitable method by which we can maintain enough tool building capacity for the peaks encountered in emergencies without burdening the builders with financial and other loads too heavy to be borne in peacetime?



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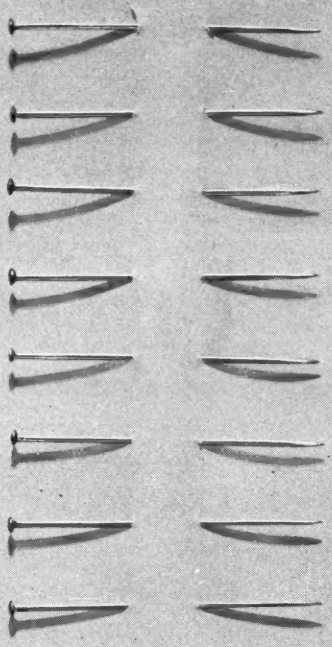

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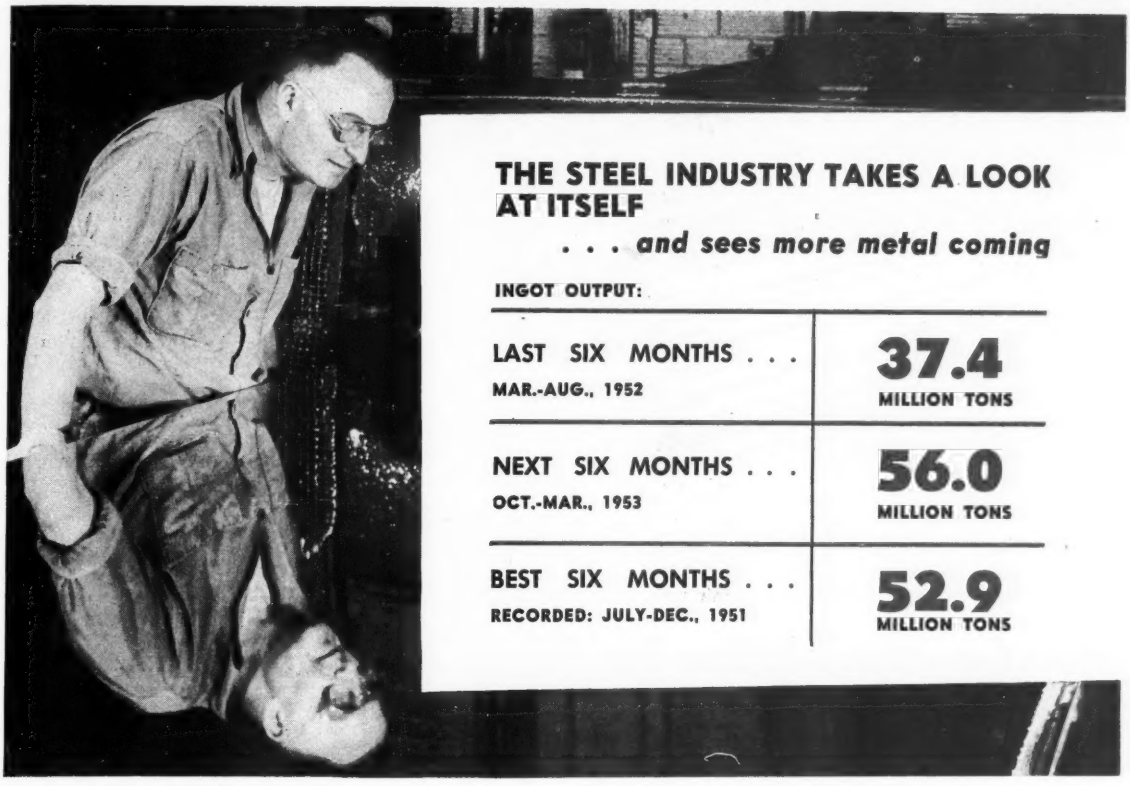


Supply-Demand Balance Nearer

Fewer tickets but more steel will be available in the first quarter as NPA causes some ambiguity while it tries to get even with its bookkeeping

YOU MAY be getting deliveries on more steel than ever before in the next six months.

That's despite the ambiguous reports that automakers and other durable goods manufacturers will receive first quarter allotments of only 60 per cent of the steel allocated in the third quarter. Automakers, so the reports go, will get enough copper and aluminum for 1,150,000 cars, but the steel ration will be cut sharply.

Another Look — Something is odd there, as a glance at the accompanying table indicates. Steel expansion projects are coming in rapidly now (see the story on p. 82), and in the next six months we'll have the capacity to produce — and probably will produce — more steel than in any other half-year period in the history on the industry.

The ambiguity about the 60 per cent arises because of bookkeeping procedures used by the planners in Washington. They want to get current with their tickets. It wasn't practical to do so in the third or fourth quarters because tickets for those periods came out before the steel strike effects could be fully appraised.

Practical—Those tickets were allowed to carry over. The first quarter of 1953 was the first period not fully allocated, so that's the time picked to get even on tickets. Deliveries won't be curtailed because some fourth quarter paper will still be good for the first.

Allotments of steel for the first quarter total 17,669,407 tons; for copper, 1,581,000 pounds; for aluminum, 872,244,000 pounds. The nonferrous allotments are about what they were in the fourth and third periods, but the steel ration is down for accounting purposes.

A Matter of Business—So, total steel coming even to the consumer durable manufacturers in the next six months will be considerably higher than 60 per cent. Besides the carryover influences which will raise the percentages, another possibility is that business for steel consumers may not be as good as expected and they'll use less of the metal than they now estimate.

Steel industry officials are so worried about that last possibility that they think the supply-demand balance in steel will come much sooner than midyear, the time NPA men are now looking to as Decontrol Day.

Turbine-Generator Capacity Doubles

C. H. Holley, left, and H. Dana Taylor, General Electric Co. engineers, inspect field windings on a turbine-generator utilizing Cond-Al, a new alloy they helped develop. The alloy permits development of 3600-rpm turbine-generators with twice the capacity of the largest units of this type, now rated at 160,000 kva

Steel Capacity: 7-Million-Ton Gain in '52

Rise is somewhat short of what had been expected, but growth will continue to 120 million tons in 1953. Blast furnace and coke capacities are rising, too

STEELMAKING capacity in the United States is going up 7 million net tons this year, a survey by STEEL indicates. (See pages 146 through 160.)

This increase is somewhat short of what had been expected. Early this year it appeared the rise would be around 10 million tons. Attainment of the 10-million-ton increase was thwarted by the steelworkers' strike, labor troubles among construction workers, shortages of materials and bad weather early in the year.

Going Up—STEEL's survey shows the nation's capacity for making steel for ingots and castings will be around 115.6 million net tons on Jan. 1, 1953. On Jan. 1, 1952, the capacity was 108.5 million tons (see STEEL, Mar. 3, 1952, p. 51). By July 1, 1952, the total was up to 109.3 million tons.

While the table shows Jan. 1, 1953, steelmaking capacity will be 114,655,971 tons, the total actually will be approximately 115.6 million tons, for the table does not include the new Fairless Works of U. S. Steel Co. Enough of the Fairless capacity is expected to be in operation by next Jan. 1 to boost the total to 115.6 million tons.

Outlook—Projects under way or planned for completion after next Jan. 1 will push steelmaking capacity up to approximately 120 million tons. This is somewhat below what had been expected, for economic considerations caused some expansion plans to be scaled down or abandoned.

In the steel expansion the trend of rises in open-hearth and electric furnace capacities and a decline in bessemer capacity continues.

Big Gain—Blast furnace capacity is making a big jump, too, in the last half of this year. STEEL's survey shows it will go up 4.3 million net tons. Thus on Jan. 1, 1953, blast furnace capacity will be 78,990,718 tons, compared with 73.4 million tons on Jan. 1, 1952, and 74,710,398 tons on July 1, 1952. Expansions to be completed after next Jan. 1 will raise blast furnace capacity to about 82.7 million tons.

Chain Reaction—The rise in blast furnace capacity is bringing about an increase in coke capacity. STEEL's survey shows that capacity of coal chemical recovery coke ovens on Jan. 1, 1953, will be 67.9 million net tons, compared with 64.2 million tons on July 1, 1952. On last Jan. 1, capacity was 63.2 million tons. Expansions to be completed after next Jan. 1 will push capacity of coal chemical recovery type ovens to 69.4 million tons. Beehive coke oven capacity on July 1, 1952, was 3,861,750 net tons, and it will be unchanged Jan. 1.

Plan New Electric Furnace

Vancouver Steel Ltd., Vancouver, B. C., will build a $4-million electric furnace near the site of an iron ore deposit on Vancouver Island.

The output of steel billets will be shipped to the company's rolling mill in suburban Burnaby.

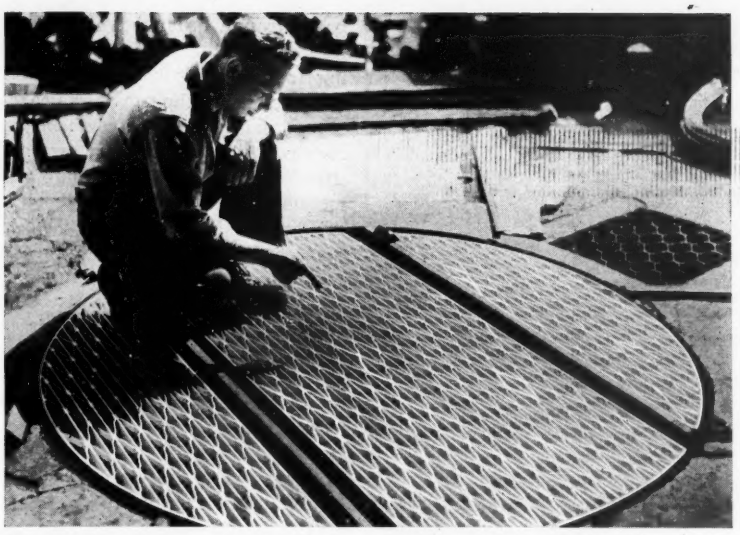
New GE Building Planned

General Electric Co. plans to expand in the growing Delaware River Valley industrial region. GE will build its largest apparatus service shop and warehouse building in Philadelphia, beginning late in September. The new plant will be a one floor building with 130,000 square feet of floor space. It replaces the oldest service shop in the GE organization.

PAD Allots Steel for Pipeline

Thirteen large crude-oil pipelines, 10 large petroleum products lines and several other oil pipeline projects will receive fourth quarter assistance from Petroleum Administration for Defense for the purchase of 205,669 tons of line pipe. Total construction cost for the lines is $390.8 million.

Among the projects receiving priorities assistance for the first time are: A 960-mile crude line from Wink, Tex., to Norwalk, Calif., to be built by the West Coast Pipe Line Co., at an estimated cost of $101.1 million and a 1595-mile products line by the United States Pipe Line Co., from Port Neches, Tex., to Newark, N. J., at an estimated cost of $141 million.



When Weather Turns Worse, Turntable Still Turns

Freezing weather is not as bothersome to turntable operations in materials handling when this type grating is used. Ice and snow slither right through the interstices, leaving the turntable free to operate. Made by Irving Subway Grating Co., Long Island City, N. Y., the table is about 40 per cent lighter than solid plate types. Irving uses this one on its own grounds for weights up to 5 tons

Delivery Dates: Outlook Brightens

Deliveries are generally improved over a year ago, but not in all cases. Tooling is often the bottleneck. You can expect more improvement

DELIVERY DATES can be characterized as "good", "bad" or "indifferent" depending on who you are, where you are and what you want.

One Detroit purchasing agent says about 75 per cent of the machine tool components he buys are available in normal lead times, 15 per cent are a little bit slow and 10 per cent are lagging quite a bit. There may not be another purchasing agent in the country that would agree with him; for though delivery dates generally are better this fall than last, no clear pattern is discernible industrywise or areawise.

STEEL polled industrial associations and selected manufacturers on delivery dates last week. Here are some of the results:

Die Castings—When dies are on hand, die casting deliveries can be made in four to five weeks—about normal. When new dies have to be designed and made, deliveries range from 10 to 15 weeks and longer. Deliveries a year ago were running about twice as long. Industry has been operating below capacity due to lower automotive production and slowness in appliances.

Stampings — Four-to-six-weeks delivery is typical when dies are available, though some firms report virtually immediate delivery. Depending on the complexity of the dies, 8-14 weeks are required when the dies must be made. Many firms have open capacity with materials in fairly good supply and tools usually the chief hold-up.

Ball and Roller Bearings—Delivery time varies with size and shape. Some bearings are available from stock, others require 14-16 weeks. Regular roller bearing deliveries range from two to seven months while small and medium-sized ball bearings take about 10-12 weeks. Deliveries in roller bearings are somewhat faster than a year ago while ball bearings are running about the same.

Fractional Horsepower Motors—Some firms report four-to-five-months deliveries on standard models while others report over-stocks with immediate delivery. Shortages of sheet and strip are blamed where delay is present, and delivery is slower than a year ago. For those firms offering immediate delivery, the situation is much improved over a year ago.

Gears — Up to around 40-inch pitch gears can be delivered from stock 95 per cent of the time. Specials, if fabricated from bars or welded plate, can be obtained in four to five weeks. When steel castings are required for larger sizes, at least six weeks are required to obtain the casting and eight to ten weeks for the finished gear.

Gray Iron Castings—Can be obtained in some cases in as little as three days; normal time's a few weeks. Delivery generally is much improved over last year.

Steel Castings—Quoted earlier this year for 24-to-36-weeks delivery, steel castings are now available in 6 to 12 weeks. Deliveries would have improved further had there been no steel strike to increase producers' backlogs.

Copper Wire — Available from stock in nearly all cases. Much improved over the year-ago situation.

Fasteners — Average delivery about six to eight weeks. Small sizes can be obtained quickly but sizes from one-half inch on up are catch as catch can. Defense is taking a heavy bite of the output and hot-rolled nut-flats, rounds and hexagons are still tight.

Screw Machine Products—Delivery ranges from one or two weeks to five months. Machines from inch and one-half capacity on up are very busy with defense orders; smaller capacities are fairly slack. Material is usually the hold-up on small-diameter parts.

Nebulous—It is probable that despite the variations from area to area and industry to industry, delivery dates are going to continue to show steady improvement. Backlogs in general are being whittled down as the hump in defense expansion is reached.

But at least for the time being, buyers and sellers say that delivery dates are still important factors in making sales. All admit that if you know the right people, or are the right people, your delivery problems are not as bad as the stranger's.

Authenticated

M-M Makes Multi-Use Machine

Minneapolis-Moline Co., Minneapolis manufacturer of farm machinery, has come up with a new self-propelled, multi-use implement. Called the Uni-Harvester, it can be a combine one minute, above, and a two-row corn picker the next. The switch is made with one bolt, two slip pins and two spring-release pins. Specially designed units are mounted on a self-propelled unit, called the Uni-Tractor, with the aid of a small hoist. Other units are in the testing or planning stages

Wage Fumble in the Pass-Through

Procedure for raising ceiling prices to reflect wage increases is unworkable say many industry men. OPS promises quicker action

THE PASS-THROUGH price formula permits an average 2 per cent increase in the price of fabricated metal products. Unfavorable reaction results because the formula makes no provision for wage increases.

That allowed percentage varies according to the ratio of metal and labor required to produce an item (see STEEL, Sept. 15, p. 63), but it's never very high. In the case of gray iron castings where wages constitute a fairly high 50 per cent of the price of the castings, the latest wage increases, which are not allowed in the formula, add about 10 per cent to the cost.

Angry—Members of the Gray Iron Foundry Industry Advisory Committee meeting with OPS last week branded the formula as "utterly insufficient" to take care of its needs. Gray iron foundrymen, along with many other industry men, believe the OPS pass-through formula must include workable provisions to increase ceiling prices to compensate for wage raises. Most foundries are not taking the small metal price increase now offered, but would snap up a reasonable wage-materials-price pass-through. For more on gray iron foundries, see the story on p. 85.

OPS, recognizing the need for passing through wage increases has streamlined and sped-up its industry earnings standard procedure from a crawl to a slow walk. That's the only means currently open to industry for relief.

Room for Improvement—Under the new plan, OPS will reduce and standardize its requests for data and ask only for information readily available to companies selected to report. The new system will make it possible for OPS to act on applications in weeks—not months—say OPS officials. Criteria for obtaining price relief on the basis of wages, which make it virtually impossible to obtain the needed help, remain unchanged.

Other wrinkles in GOR 35, the pass-through order, have not been ironed out either. The Drop Forging Industry Advisory Committee, while doubting the use of the earnings standard would give them the required help, pointed out two additional flaws: Pass-through on metals should apply to all steel purchased through a warehouse; cost of dies should be allowed to be charged to their customers. Drop forgers reiterated a point chorused by many other industries—they need price relief to compensate for wage increases urgently and immediately, not months from now.

Hidden Payroll Costs

Unreported fringe benefits to employees pick industry's pocket of $25 billion yearly

HIDDEN PAYROLL costs jumped last year to an alltime high average of $644 per employee.

"In spite of this heavy increase and in spite of the impact of these fringe benefits on the national economy, the bulk of hidden payroll costs are not reported by the Bureau of Labor Statistics, which is the government's primary source of such information," says Dr. Emerson P. Schmidt, director of economic research for the Chamber of Commerce of the U.S., which made the survey.

Big Bill—Dr. Schmidt estimates the national cost of the hidden payroll at "something less than $25 billion a year." The costs to the 736 companies surveyed averaged 18.7 per cent of their entire payrolls or 31.5 cents per payroll hour.

The hidden payroll includes social security; unemployment and workmen's compensation; discounts on goods purchased; free meals; pensions; savings and stock purchase plans; paid vacations, holidays, rest and lunch periods; and profit sharing and bonus arrangements. Not included in the hidden payroll are extra pay for night shift and Sunday work or straight production bonuses, all considered part of the regular pay.

A Little Less—Generally, manufacturing companies paid 16.4 per cent of payroll for fringe benefits, somewhat less than the average, while nonmanufacturing com-

panies paid 22.2 per cent. Legally required benefits amount to only 3.5 percentage points of the average 18.7 per cent, while voluntary payments total 15.2 percentage points.

Commenting on the survey, Dr. Schmidt says that the major impact of fringe benefits in prosperous times is on the consumer to whom the costs are passed on as higher prices. But in depression the impact is on profits and employment.

Crane Plans Expansion

Expansion and diversification of Crane Co. is forecast by the company president, John L. Holloway. Now a manufacturer of valves, fittings and plumbing goods, future plans call for enlarging the Burbank, Calif., aircraft components plant and varied operations in electronics.

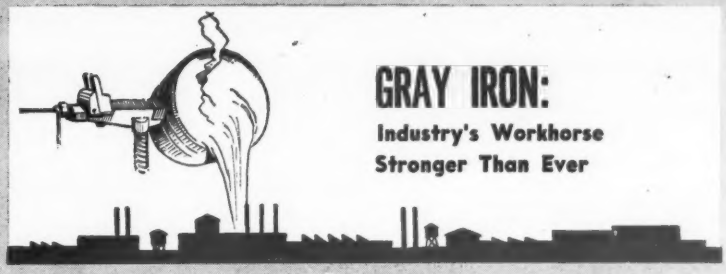
In their first venture into the field of raw materials, Crane Co., Chicago, is at the "crossroads" in the production of titanium, Mr. Holloway announces. Plans call for the use of titanium instead of stainless steel as trim for valves, but until titanium becomes more plentiful, Mr. Holloway expects it to be used largely in aircraft construction.

Giant Nickel Plant Restored

"The free world is guaranteed a supply of nickel at least ten per cent larger than when the Communists invaded Korea," General Services Administrator Jess Larson remarks in commenting on the rejuvenation of Nicaro, U. S.-owned and privately operated Cuban nickel plant.

Begun in 1942, Nicaro produced 63 million pounds of nickel before its shutdown as a surplus operation in 1947. At the direction of the Munitions Board its restoration was begun early in 1951. The plant is operated by the Nickel Processing Co., owned jointly by American and Cuban capital.

Capacity operation was reached in July, while recent figures show that Nicaro is producing more nickel than its peak in World War II. Output is rising rapidly toward a goal of 30 million pounds a year, according to Mr. Larson.



GRAY IRON:

Industry's Workhorse Stronger Than Ever

ATOMS, ROCKETS and wonder metals may be getting the glory, but gray iron is still industry's grand old workhorse. Since the earliest known iron casting, a kitchen stove made in China about the time of Christ, iron castings have helped sustain industry and moved forward with it. Alloying and metallurgical control are strengthening the traces as it continues to pull its load.

Every year from 1942 to 1951 has seen a growth in the tonnage of gray iron castings sales with a peak of 15 million tons reached last year. This year sales are headed for a 12½-million-ton lump, far above the 9-million-ton annual output during World War II.

Solid Contender—Handle of iron sales is the increased per capita use of iron castings in such civilian products as automobiles, machines, agricultural implements and houses. The post-war flood of motor blocks, manifolds, flywheels, grates, pipe fittings and countless other cast iron items has warmed the hearts of iron men.

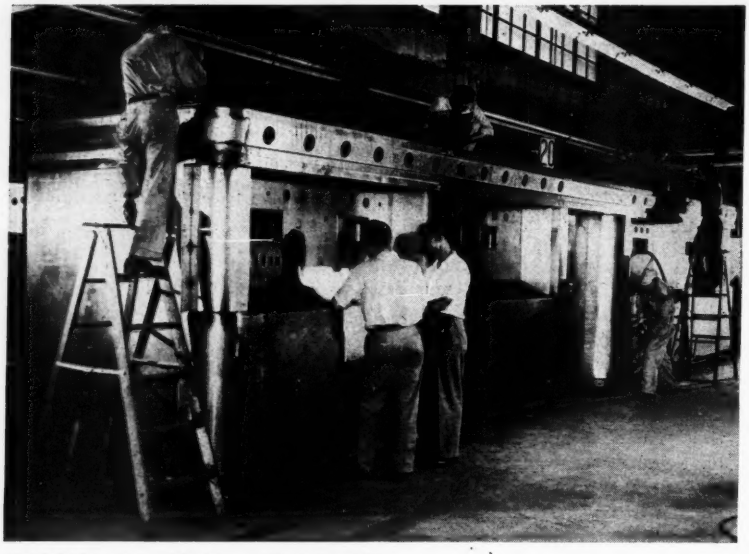
Though the flow of iron products has started to cool this year as shortages are met, technology is keeping gray iron strong competitively. Nodular, or ductile iron is still an expanding sales field. In one case, a manufacturer of stationary diesel engines replaced his forged crankshafts with the cast iron product. Generator shafts in power installations, all of which used to be steel, are going to iron in many instances. Ford Motor Co. continues to use cast iron crank shafts in its auto engines.

Some Defense Molds—Defense is a reasonably important part of the iron castings business right now, primarily in machines to turn out defense products. But if the time comes when ships, tanks and military vehicles with their multiplicity of cast iron components get rolling, direct defense will become a strong factor as it was during the last war.

As things stand, the gradual saturation of the civilian market is turning casters to thoughts of competition, especially in the heavy (over 3000 lbs) castings end of their output. Labor costs run about 60 man-hours per ton, and in today's labor market that's big potatoes. It relegates the recent hike in pig iron prices to the position of just another straw on the iron camel's back. Selling will have to be a lot less competitive in the gray iron foundry industry before melters attempt to pass on the price hike in materials to their customers. Now they're waiting and watching.

Mechanization — Iron foundrymen are aware that less labor and more mechanization would be a good thing, and in shops where motor blocks or other mass-production castings are made, mechanization is relatively complete. Conveyors, shake-out machines, hopper sand-feed and other labor cutting devices are widely employed. But in the typical job shop where one to ten castings may well constitute a complete order, labor-saving devices on such a large scale just don't pay.

Most shops, however, do have better metallurgical controls than ever before. They're vital in giving the customer a better product than was possible ten or twenty years ago, and that's the enduring strength of gray iron castings sales. Over the years the sales ratio of 400 lbs of gray iron to one ton of rolled steel has held pretty well, says Donald Workman of the Gray Iron Founders Society Inc. And holding your own these days takes constant improvement. New techniques and new alloys in iron casting may cause sales jiggles, but casters figure over the long pull their future isn't flashy, it's just solid.



Cubicle for Voice of America

Daniel Karp, right, vice president of Karp Metal Products Co. Inc., Brooklyn, N.Y., studies blueprints of the 40-foot-long transmitter cubicle fabricated by his company for the Voice of America. After hardware and accessories are installed and it is painted, General Electric Co., Schenectady, N.Y., will add its 100-kw transmitting equipment. Karp has manufactured 25 units of this type

Less Stretchout, More Subcontracts

OPPORTUNITIES to subcontract on defense orders may increase, not subside, from now until middle of next year.

Many manufacturers geared for defense were concerned over talk in Washington of another stretchout in military spending (STEEL, Sept. 15, p. 65). Their fears are now lessened considerably. Defense Secretary Robert Lovett is saying that the administration isn't planning to stretch out the stretchout. Military expenditures may take a temporary $3-5-billion drop as a result of the steel strike. Some of this lag probably will be made up by next January.

The subcontracting peak may be yet to come. Mr. Lovett says that major tooling is now nearly completed and the era of mass production is still ahead. This could mean that subcontractors can expect more work, as the nation's assembly lines increase their flow.

One fly in the ointment, however, will be the government's metals take. Metalworking companies may produce fewer units for defense as price-hikes force the government to trim purchases of metal products. Yet this reduction in procurement will not be "dramatic," says John D. Small, munitions board chairman.

If lack of defense subcontracts is one of your procurement problems, check over the table at the bottom of the page. It's a selection of the latest contracts awarded by the government to metalworking companies. Each contract is valued in excess of $100,000.

PRODUCT	CONTRACTOR
Tank & Combat Vehicle Parts	Cegmatic Co., Milwaukee
Tank Spare Parts	Continental Motors Corp., Muskegon, Mich.
Automotive Tools	Gray Co. Inc., Minneapolis
Shells, 105 mm	Altorfer Bros. Co., Peoria, Ill.
Metal Parts for Shells, 60 mm	Hart & Cooley Mfg. Co., Holland, Mich.
Primers, Percussion	Ainsworth Mfg. Corp., Detroit
Fuzes	Indiana Die Castings Inc., Elwood, Ind.
Fuzes, Dummy	Deere & Co., Moline, Ill.
Projectiles, 20 mm	Automatic Pencil Sharpener Co., Beverly Hills, Calif.
Cartridge Cases	Stoner Mfg. Corp., Aurora, Ill.
	Borg-Warner Corp., Chicago
Power Rectifiers	Electronic Associates Inc., Long Branch, N. J.
Frequency Shift Receiving Systems	Northern Radio Co., Seattle
Winches, Hatch Opening	Westinghouse Electric Corp., Pittsburgh
Trestles, 50 Ton	Towner Mfg. Co., Santa Ana, Calif.
Pontoons, Aluminum	Beatrice Steel Tank Mfg. Co., S. Beatrice, Nebr.
Gunwales, Aluminum	Allison Steel Mfg. Co., Phoenix, Ariz.

Builders Encouraged

Industrial jobs slip, but more residential, commercial work is likely under relaxed controls

A DOUBLE shot in the arm may bolster the health of the construction industry.

Contractors welcome indications that the National Production Authority intends to remove restrictions on construction by Apr. 1, 1953. And the decision of the Federal Reserve Board to suspend credit controls over residential and commercial construction cheers them, too.

For Small Projects—NPA says that construction of commercial or public buildings without NPA permits may begin by spring. The builder will have to complete the project without requiring delivery of more than 25 tons of steel in each quarter. Approximately 60 per cent of the applications which NPA receives are for jobs using less than 25 tons per quarter.

Secondly, NPA may drop the prohibition against use of structural steel shapes in private residential construction. Apartment houses probably can go into construction without NPA authorization if the owner will not need more than 2 tons of steel per unit for a walk-up building, or 3 tons for an elevator building.

Recreational Construction — Indications are the NPA plans to allow recreational construction without permits, provided that the owner requires delivery of less than 5 tons of steel per quarter.

NPA fears that the industrial expansion program is "over the hump." However, one man's poison is another man's meat. New industrial plants will not require as great a supply of the available building materials, leaving more for civilian construction.

More Good News—The second half of the double dose of good news for the building industry is the decision of FRB to suspend credit controls (Regulation X) over residential construction. FRB tosses out the 50 per cent down payment required for all commercial building projects and the curbs on second mortgages.

NPA Shuffles Positions

Washington is seeing some old faces in some new jobs as three important positions are shuffled. Richard A. McDonald, right, chairman of executive committee, Crown-Zellerbach Corp., San Francisco, succeeds Henry H. Fowler as chief, National Production Authority. Mr. Fowler now heads the Office of Defense Mobilization. Mr. McDonald was acting deputy administrator of NPA and was associated with the office since February. Horace B. McCoy, an assistant administrator of NPA and director of Office of Industry and Commerce, is deputy administrator now. John E. Timberlake, left, general manager-sales, Jones & Laughlin Steel Corp., Youngstown, will be director of Iron and Steel Division of NPA, succeeding M. B. McCafferty, Wheeling Steel Corp., on Oct. 1

CHECKLIST ON CONTROLS

Materials Orders

TUNGSTEN, MOLYBDENUM — Amendment of Sept. 12, 1952, of NPA Order M-81 eliminates allocation control from carbon- and hydrogen-reduced substantially pure tungsten and pure molybdenum. It was effective Sept. 12.

TERNE PLATE—Amendment of Sept. 12, 1952, of NPA Order M-24 removes restrictions on the end-use only of terne plate. The amendment does not affect the status of terne plate as a controlled material. It was effective Sept. 12.

EMERGENCY STEEL — Revocation on Sept. 17, 1952, of Direction 2 to NPA Order M-6A withdraws provisions for additional steel to rehabilitate damage done by floods in May.

Price Regulations

CHEMICAL SPECIALTIES—Amendment 55 of CPR 22, issued Sept. 10, 1952, and effective Sept. 15, eliminates the requirement that manufacturers of new chemical specialties which are mechanical mixtures use Form 128 in reporting ceilings on new products. Chemical specialties include chemicals used in treating and processing rubber, ceramics, and petroleum and products used in metal refining, electroplating and building and plant maintenance.

IRON ORE—CPR 169, issued Sept. 12, 1952, and effective Sept. 17, established new dollars-and-cents ceiling prices for merchant iron ore produced in the Lake Superior District of Minnesota, Wisconsin and Michigan. The new ceilings are $0.75 a gross ton above ceilings previously established.

CENTRAL OFFICE EXPENSES — Amendment 5 of General Overriding Regulation 10, issued Sept. 16, 1952, and effective Sept. 22, permits manufacturers, when applying for a ceiling price increase because they are experiencing losses in the operation of separate plants or factories, to include an allocation of central office expenses in calculating the loss.

SALES BELOW CEILING — General Overriding Regulation 36, "Certification of Sales Below Ceiling," issued Sept. 17, 1952, and effective Sept. 22, establishes the procedure for filing certification of sales of materials or services at below ceiling prices so that sellers may be relieved of OPS reporting requirements with respect to such sales.

EARNINGS STANDARD — General Overriding Regulation 37, "Required Records," issued and effective Sept. 16, 1952, streamlines the procedure in determining whether price increases are justified under the industry earnings standard. The standard itself is not changed.

IRON, STEEL—Amendment 6 of CPR 98, issued and effective Sept. 15, 1952, permits a warehouse reseller of iron and steel products to continue using authorized mill price increases of his principal source of supply in calculating his own ceilings until he receives invoices which reflect the increases. Under Amendment 3 of CPR 98, warehouse resellers were allowed to use the increased ceilings of their principal supplier for one month only following the month in which the producer put an authorized increase into effect.

VALUE OF PRODUCTION—Interpretation 2 of Supplementary Regulation 17 of CPR 22, issued Sept. 17, 1952, states that if a manufacturer does not have inventory records required for computing the "value of production" as defined in Section 11 (c), he must make a reasonable estimate, based on past experience, of the inventory figures required. He must attach to OPS Public Form 100 a statement of the methods used in arriving at the value of production figures based on such estimates.

FRIT—Supplemental Regulation 32 of CPR 22, issued Sept. 18, 1952, and effective Sept. 22, permits manufacturers of ceramic and porcelain enamel frit to increase ceiling prices by 5 per cent.

Renegotiation Rules Change

Defense contractors who take a loss or make only a small profit on portions of their business which are not subject to renegotiation may have this factor taken into consideration under some circumstances by the Renegotiation Board.

Staff Bulletin No. 8, entitled "Loss and Small Profits in Performing Non-Renegotiable Contracts," discusses at length the criteria in giving credit for such losses or small profits.

Part 1459 of the Renegotiation Regulations has been amended to permit firms who sell brand name or proprietary products to the government for free issue to personnel to charge a portion of their advertising expense against their renegotiable business.

Part 1453 has been amended to exempt from renegotiation all prime contracts of the Bureau of Reclamation except those entered into after June 30, 1950 for materials and construction work directly or indirectly related to the generation and distribution of hydroelectric energy.

Because of the small number of renegotiations in the field of construction and architect-engineer contracts and subcontracts for defense work, the board has assigned such cases to the regional boards in Chicago, New York and Los Angeles.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor*

Iron and steel scrap is now in good supply thanks to the second quarter scrap drive. But with the 120 million-ton steel expansion goal, shortages could develop next year

SCRAP IRON and steel now is in good supply and promises to remain so for some time to come. Credit for the happy state of affairs goes to some 50,000 industry men—mostly salesmen for steel mills, steel warehouses and foundries, as well as auto wreckers.

The second quarter scrap drive in which 1640 scrap mobilization and 102 auto wreckers' committees participated under the direction of Edward W. Greb, director of NPA's Salvage Division, helped in accumulation of an inventory of 5.5 to 6 million gross tons of scrap at consuming plants as of July 31, 1952—highest figure in history.

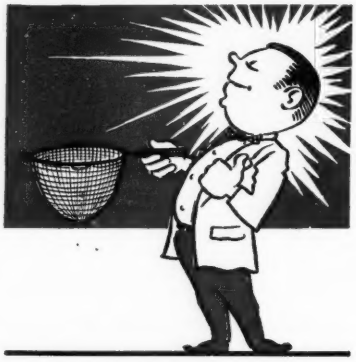
Victorious Scrap `Scrap—With that much scrap on hand and lake iron ore shipments in the present volume, fears of a scrap shortage next spring have abated and NPA scrap activities have been curtailed.

While there continues to be a shortage in certain grades—railroad, industrial and electric furnace scrap—allocation is not warranted. The only scrap allocation now being made involves rerolling rails which are short because of recently curtailed shipments of new rails for replacement.

Temporary?—Next year steel ingot production will make a substantial advance toward the expansion goal of 120 million net tons capacity, so scrap may again be scarce. To be on the safe side, the scrap allocation machinery is being kept intact with the scrap mobilization and the auto wreckers' organizations standing by for a possible drive next year.

Pollution Solution? . . .

Good sales prospects are in store for manufacturers of equipment for preventing or minimizing stream pollution and for decontaminating polluted water. It comprises such items as sedimentation tanks, pumps and other machinery, motors, piping, heavy incinerator equipment, filters, etc.



ANTI-POLLUTION EQUIPMENT
. . . big sales ahead

If the average American realized that that stream or lake, on whose shores his community is located, is polluted and had a picture of what has to be done chemically to make it safe for drinking and cooking, he would want to do a lot more about it than at present.

So the United States Public Health Service is preparing an educational packet for distribution among civic leaders in the country's cities and towns—Chambers of Commerce, women's clubs, etc.

At present, communities are spending $150 million a year in the fight against pollution—an inadequate sum. The Public Health Service wants this expenditure tripled immediately, with further substantial increases in the future.

This objective is interesting to industry in another way. Industry's expenditures on water treatment facilities are now much higher than they would be if the municipal water commissions of the country were more effective.

Stay of Execution . . .

Upon request of individual subcontractors concerned, the Renegotiation Board will agree to defer until Jan. 31, 1953, the renegotiation of subcontracts for new durable productive equipment.

Basis of the axe-holding: The Senate Finance Committee wants time early next year to discuss with the board some questions inherent in special provisions of the 1951 Renegotiation Act. Under Section 106(c) of the act, the board is required to grant partial exemptions from renegotiation of subcontracts for new durable productive equipment based upon the total life of the equipment. The question is whether further exemptions should not be given upon the basis of the extent to which an item of equipment is used in performing a renegotiable defense contract.

The extension to Jan. 31 applies only to renegotiation proceedings and does not affect the filing of reports.

The Bookworm's Corner . . .

Pertinent reading for machine tool men—builders and users—are three congressional documents containing statistics and information, not readily to be had elsewhere, on machine tools in the defense program.

One is Senate Report 1107, obtainable from the Joint Committee on Defense Production. The others are Senate Report 1988, and the record compiled in an investigation of machine tool shortages, both available from the Senate Small Business Committee. . . .

Small manufacturers interested in developing export business should get their names on the mailing list of the Office of Small Business, Mutual Security Agency, 806 Connecticut avenue N. W., Washington 25, D. C. This agency is bound by law to advise small business of opportunities to participate in any procurement financed by American dollars under the mutual security and Point 4 programs. . . .

Sales-promotion managers will be interested in a new 234-page monograph entitled "The Manufacturers' Agent as a Marketing Institution." Order from Superintendent of Documents, Washington.

Morgan Equipment at the FAIRLESS WORKS U. S. Steel Co.

It has been our pleasure to work with U. S. Steel Company for a good many years. During that time the company has entrusted us with the designing and building of 22 continuous rolling mills of various kinds.

Now at the Fairless Works we are building two more — a 10 stand skelp mill and an 18 stand horizontal-vertical continuous bar mill.

A total of 52 Morgoil Bearings are used — in 2 high and 4 high mills. In addition, five Morgan Ejectors will be used on the reheating furnaces.

RM-47

MORGAN CONSTRUCTION CO.
WORCESTER, MASSACHUSETTS
English Rep., International Construction Co., 56 Kingsway, London W. C. 2, England

MORGAN
WORCESTER

ROLLING MILLS • WIRE MILLS • AIR EJECTORS • GAS PRODUCERS
MORGOIL BEARINGS • REGENERATIVE FURNACE CONTROLS

He's right! . . . Miss Pennington

. . . **right** . . . according to the deficit spending carried out in our present day economy. Only a *"wheel deal"* politician can take **two dollars** from **your** pocket and **two dollars** from **my** pocket and get **five dollars to spend.**

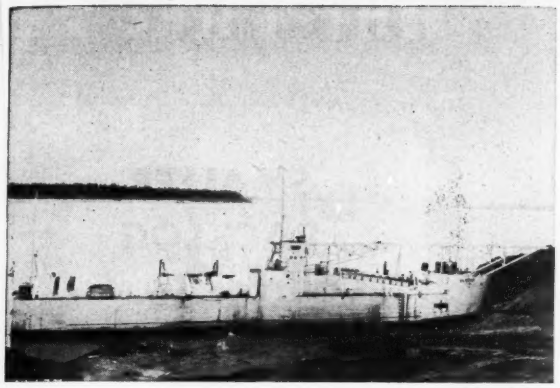
If you agree that the little student in yesterday's schoolhouse was wrong . . . where are the Miss Penningtons of today who can put us back on the right track? It was **red-brick-schoolhouse arithmetic** that made our country strong and great . . . it was the Miss Penningtons who cast their ballots for the proper **adding of facts** . . . and it's going to take sound thinking Americans in the voting booths to make **two** and **two equal four once again.**

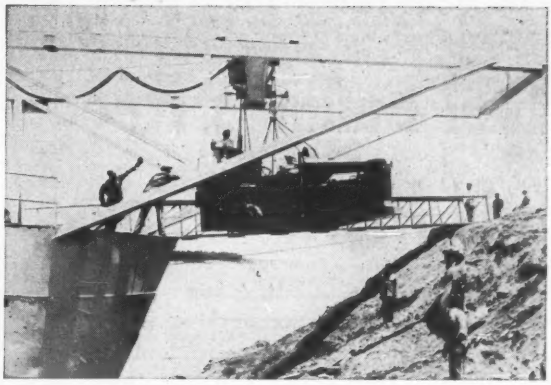
652-CH

*Cold Wrought Metal Fasteners by

Chandler Products Corp.

1491 CHARDON ROAD • CLEVELAND 17, OHIO





LeTourneau Carries Gospel, Industrialization to Liberia

With its superstructure stuck out like feelers, the "Ark of LeTourneau" is actually the vehicle for a combined missionary-industrial development expedition to Liberia sponsored by R. G. LeTourneau Inc., Peoria, Ill. Aims: Raise rice production through mechanical means, aid in livestock development and establish successful commercial fishing operations, all the while taking the Gospel to the Liberian natives. Built-in topside crane enables the converted LSM to pick up cargo from shore, carry it aft and place it in the hatch. Expedition's cost: $1 million

Rifts Remain in Schuman Plan

The coal-steel pooling plan is officially started but the problem of the Saar could force France out of the union. With the Saar, she accounts for a third of the group's output

SIX EUROPEAN countries are launching the Schuman Coal-Steel Pool Plan into riled waters. Disagreement between the Germans and the French over control of the Saar could still easily sink the plan.

Under the pooling plan, France, West Germany, Italy, Belgium, Holland and Luxembourg are to set the boundaries of the "common market," divide production according to the most efficient, most economical source or country and divvy up available raw materials. These countries account for about 18 per cent of the world's supply of steel and about 21 per cent of the world's supply of pig iron and ferroalloys.

Real Story — Theoretically, the biggest problem of the plan is designating a "common market" without having a "common currency." Practically, the big joker in the plan is who has control over the production of the Saar.

Frenchmen describe it as a simple problem in mathematics. Actual production figures are a little over 11 million tons of steel a year in France, 3 million tons a year in the Saar and 15.5 million tons a year in Germany. With France controlling the Saar's production, the balance is 14 million tons against 15.5 million tons. A fair fight, the French say. With Germany controlling the Saar, the balance is 11 million tons against 18.5 million tons. The French indicate they'd never stand for that.

Not In, Not Out—The British, while they don't want to formally join the plan, don't want to be entirely left out of the Continentals' planning either. British Foreign Secretary Anthony Eden has personally gone to the Schuman Plan Assembly to explain his "Eden Plan," which calls for organic links between the Schuman assembly and the Council of Europe. The latter body, the British instigated three years ago.

What's all this mean to the American producer? European cartelism has always been a tough nut for American exporters to crack. The Schuman Plan contains big possibilities of promoting giant cartels in coal, iron and steel. By eliminating competition for raw materials, those costs could be held down. By eliminating competition for a particular market, European producers would have only American bids to beat. By integrating Britain into the system, a united front would be presented to all non-European producers at home and in other export markets. First, of course, the Saar question must be resolved or the plan will never get very far underway.

Bright Note, Maybe — Latest word on that controversy came from West German Chancellor Konrad Adenauer, after a conference with French Foreign Minister Robert Schuman. Adenauer said he and Schuman had "a spirit of optimism that we can eventually settle this delicate problem."

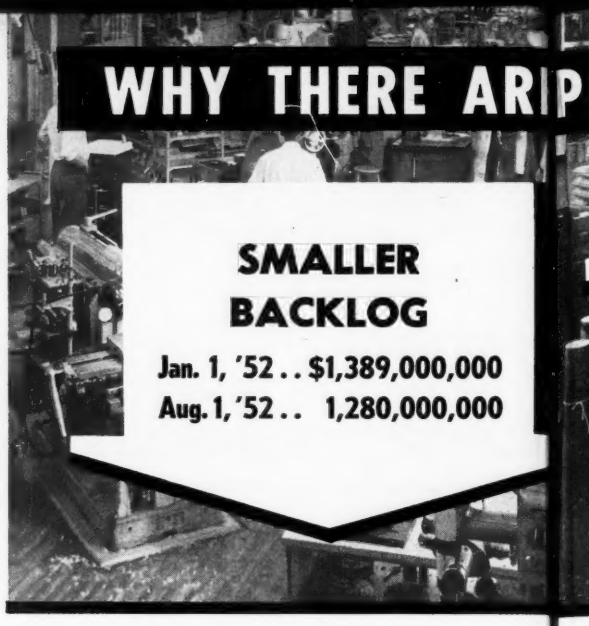
Supplies Ease in Britain

Increases in steel production in Britain bolster hopes that the industry will produce 16 million tons of steel this year compared with 15.6 million in 1951. Even with holidays in July, steel produced for ingots and castings was on a weekly average of 273,800 tons, or an annual rate of 14,236,000 tons compared with an annual rate of 13,317,000 tons in July, 1951. August figures were a 279,500 ton weekly average, or 14,535,000 tons annual rate this year compared with a 13,855,000 ton annual rate in August of 1951.

Outlook for supplies of steel is improving and an increase in imports of semifinished steel from France and Belgium has helped the rerolling trade expand its output for the general engineering trades.

Tool Builders Need Still More Business

Although the order backlog is high, the bulk of it is in large special tools or popular general-purpose units and placed with only about 60 of the 325 plants in the industry



THERE ARE problems ahead for machine tool builders.

A glance at the accompanying figures shows why; builders are producing at the rate of $100 million a month, while net new orders are coming in at the rate of only $75 million a month. The still-heavy backlog of business will keep some plants going at full tilt for a long time, but an estimated 250 to 275 of the 325 machine tool facilities in the country will be operating at less than capacity by next Mar. 31.

Double-Edged—Besides the implications of those order and production figures for the machine tool industry itself, they affect the entire defense industrial mobilization program. The keystone in the bridge to industrial mobilization is the machine tool, the machine that makes the machine for defense. Nearly two years elapsed from the time of the attack in Korea until the current machine tool production rate of $100 million a month was achieved. Now, not enough new business is coming in to support that rate for long, and the subcontracting arrangements, slowly recruited labor forces and other means built up to produce at the optimum rate may slowly erode away. Already there's talk about discontinuing some subcontracts, and layoffs of workers have occurred.

What to do? That's the question being debated now by industry and government agencies, especially DPA, NPA, the Munitions Board and the Office of Defense Mobilization's Advisory Committee on Production Equipment.

Handicaps—The task is no easy one because procurement planners don't know what's going to be needed in the future. They don't know whether and when there will be an all-out war, and they do not know how much money Congress will appropriate for defense in fiscal 1954 and succeeding years. They don't even know whether all the tools already ordered and now in builders' backlogs will be needed or whether many of them will be canceled.

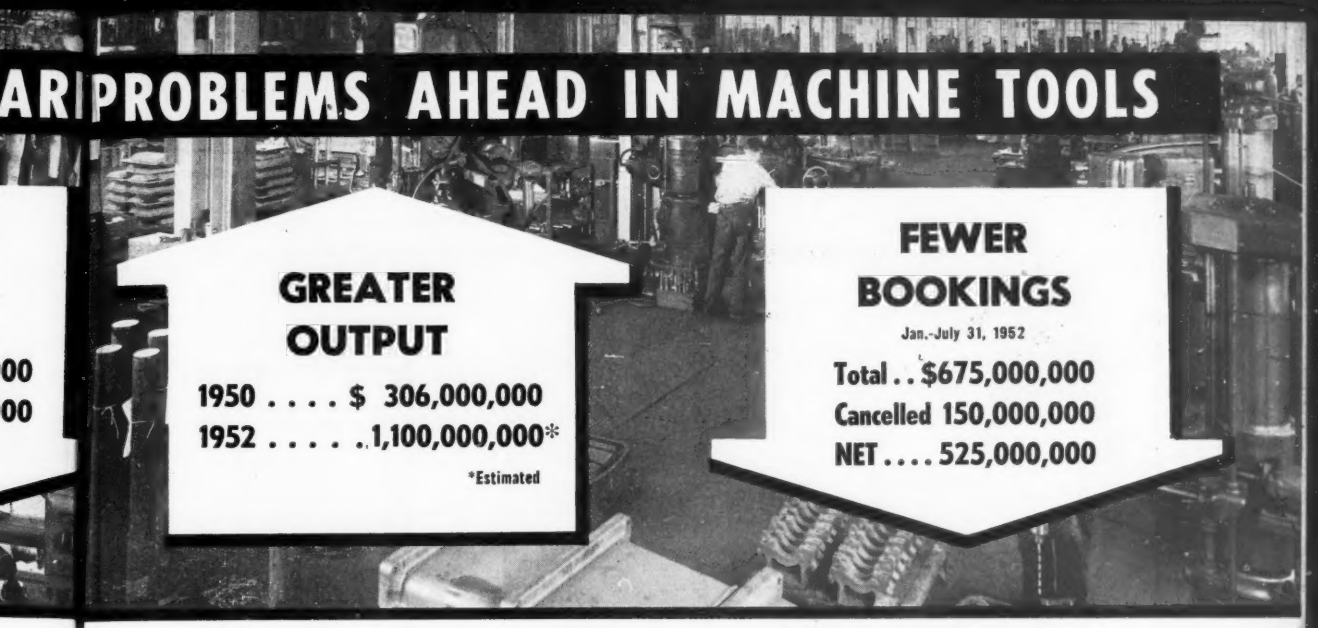
Still another complication is the fact that the capacity to build certain types of tools is still inadequate, and expansions are in order. The greater portion of the present backlog of business is held by some 60 manufacturers and comprises two types of products—high-quality, general-purpose tools and large tools needed for war production but not for normal civilian output. Today the long lead-time required to obtain tools in those two categories is holding up production in some important defense plants. Large tools are called "elephants," general-purpose tools "mules", smaller tools "rabbits."

The Problem—In general, the difficulty is this: Increase the capacity to produce elephants and the more popular mules and find business for makers of rabbits and some of the mules. The knottiest problem is the finding of business. Getting attention now is the possibility of increasing the volume of private domestic and export buying. The recent liberalization of M-41, permitting some shipments of machine tools against unrated orders, is an example.

Now the NPA is following a policy of requiring rigid justification for the issuance of ratings within the 30 per cent of current production set aside for defense-support purposes; an effort is being made to work off current ratings in this bracket in order to open the way for more unrated business. Also, the NPA is considering a further amendment to M-41 which will enable builders to make delivery promises on unrated business with assurance that the promises can be kept; it will provide that when an unrated order gets into the frozen period it will stay in that period and not possibly be knocked aside by a defense order.

The Hope—Such liberalization of the controls is expected to stimulate private and export buying. It will help in many cases where private retooling programs have been held up because of unavaila-

PROBLEMS AHEAD IN MACHINE TOOLS



bility of the tools listed in Exhibit D of M-41; in many cases the customers would rather wait and do a complete job later on rather than replace tools piecemeal now.

NPA is prepared to unfreeze Exhibit D tools as soon as they can be spared from defense; in fact, it already has permitted shipment of some Exhibit D tools against unrated orders, when that doesn't delay defense orders.

More Capacity? — As to expansion, the question involves not only the individual tools whose output must be expanded for full mobilization, but also the "how" of carrying out the expansion. Informed estimates are that if you eliminated all defense business, today's peacetime business in machine tools would come to $250 to $300 million a year. So with defense demand for machine tools falling off, with a reasonable expectation that it will fall off further, how do we go about getting machine tool builders to expand?

An answer is: Get government assistance, at least in selected areas. How much, and what kind of assistance should the government give? That is the question with which the mobilization planners now are grappling. In some cases, it is thought, manufacturers can be persuaded to expand through customary help—five-year amortization and government loans —provided the DPA can be made to realize that its present ideas about fast amortization are not satisfactory to the industry. DPA started by allowing fast amortization of 85 per cent of the cost of expanded facilities; it recently has chiseled its approvals down to 50 per cent and even less. Builders think 100 per cent fast depreciation should be the rule.

Special Deal — A proposal now under consideration calls for a special deal where expanded facilities would, upon completion, be held in standby for any future mobilization. Under this proposal, the government would enter into a lease arrangement, taking at least some of the burden off the manufacturer's back by paying him an annual rental for holding the plant and facilities in readiness. A modification of this proposal which also is being considered calls for complete government financing of these standby plants, with contracts to private companies for their maintenance and for their operation under mobilization.

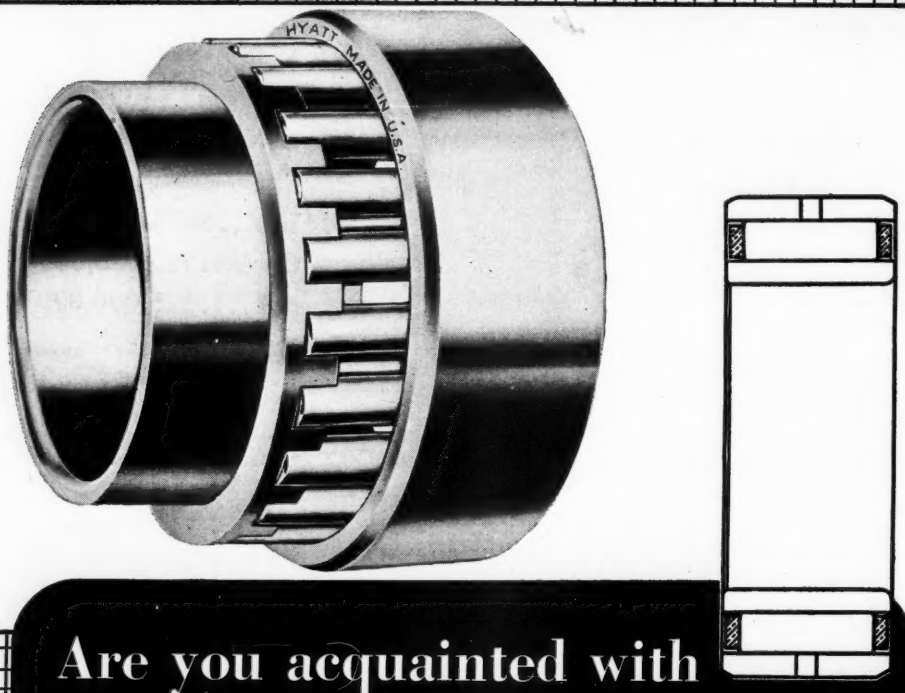
The elephants for which additional capacity is required include such items as large floor-type and table-type boring mills, large miller-planers, large planers, 10-foot and larger vertical turning lathes, large swing lathes, large gear hobbers, gear shapers and finishers.

Proposals — Inasmuch as many of these large tools are needed right now in substantial numbers for the present defense production program, these approaches are being considered: Should new facilities be erected specifically to produce these big machines, or should existing jobbing facilities be utilized to make such machines? Current thinking seems to favor the former approach, since reliance on jobbing establishments might not be satisfactory in the long run.

If the special plants are built and equipped, we would have them in standby for the future; on the other hand, definite war production jobs await the jobbing facilities so that they probably would be lost as machine tool facilities at a time when most needed to make machine tools.

Alternate — Another proposal under serious study calls for stockpiling machine tool components which govern lead-time, particularly for the large tools—components such as special bearings, all spindles and other forgings, all forged gears, and special steel castings.

A lot of problems about machine tools have arisen—and been solved —before. This time the difficulty is one of the most fundamental ever tackled: How to smooth out at a high level the cyclical trends that have plagued tool builders since the industrial revolution. Will this problem be solved?



Are you acquainted with this type of HYATT bearing?

Here is the Industrial Inch 70,000 Series three-part Hyatt Roller Bearing designed for large diameter, slow speed shafts in heavy equipment where fractional dimensions are the rule.

The races are made from alloy steel forgings which are heat-treated to obtain the greatest possible strength and durability, then finish-ground to close tolerances. The roller assembly is made up of two bronze end rings drilled to pocket the roller ends and riveted to steel spacing bars.

Built to fulfill specific requirements, this Industrial Inch Bearing, like all the other Hyatt Bearings employing solid or wound rollers, is proving most satisfactory for its particular application.

* * *

Write for Catalog No. 150 for further details in the Inch Series and all the other popular Hyatts for all your bearing needs. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

HYATT ROLLER BEARINGS

By H. C. TUTTLE *Detroit Editor*

Mirrors of Motordom

Supplier strikes, especially at Borg-Warner, are bothering automakers, although few assemblies have been lost—yet. Operating suppliers have a field day

DETROIT

EIGHT WEEKS have passed since the steel strike ended.

Are the current problems of the automotive industry the result of that fiasco, or have some other factors entered the picture? Nobody in the industry laughs off the tonnage lost by that strike, nor minimizes the tremendous job it has been to boost production above last year's level, but a survey of automotive purchasing and materials control men discloses that most feel the present problems stem largely from new strikes.

No National Spotlight—Few of these strikes have attracted nationwide attention. The Borg-Warner divisional strike is probably the largest directly affecting the industry but there are many others which have turned the procurement job into a nightmare. There are two large fastener producers strikebound. A large automotive die caster is down. A rubber company is struck; so is a big spring supplier. There have been walkouts in tool and die departments of two major independent body suppliers. Automakers themselves have not been immune.

The absence from the production scene of any one of the struck companies would probably cause only limited concern, but automen find they are hemmed in from many sides. Just as they find a new source for one particular item they discover that some other supplier is shut.

Summed up, it has meant a constant withdrawal of dies from one shop to another, hurried orders placed with unfamiliar vendors, piled up new business for companies which had part of an order.

The Reason Why—These strikes are an almost unrecognized cause of some of the large buys which have been made out of the clear sky by automakers. Parts suppliers have attributed their greatly increased business in the last several weeks to the production push of the automakers in the final quarter.

Auto, Truck Output

U. S. and Canada

	1952	1951
January	499,406	645,688
February	467,691	658,918
March	517,207	792,550
April	576,505	680,281
May	546,673	695,898
June	560,947	653,682
July	246,461	522,858
August	323,216*	571,442
September		505,758
October		558,971
November		480,199
December		402,729
Total		7,179,161

Week Ended	1952	1951
Aug. 16	36,890	129,661
Aug. 23	109,588	138,797
Aug. 30	122,632	137,479
Sept. 6	111,095	103,224
Sept. 13	138,001	136,150
Sept. 20	145,000*	135,015

Sources: Automotive Manufacturers Association, Ward's Automotive Reports. *Preliminary.

But more careful examination by some of these firms discloses that they are getting, in addition to their usual share of business, orders to make up for missing members of their particular industry. After the first flush of elation, some of these companies now realize that part of the new business is only temporary.

Auto and truck production so far has not been cut into in any real extent by these strikes, but the worry is that some of the increased parts orders which have been accepted by regular and substitute suppliers will not be delivered on schedule over the next five weeks or so.

No Pattern—Causes for the labor disturbances are hard to discover. There appears to be no particular pattern to demands, except where companies with the United Steelworkers are asked to follow basic steel's settlement. Some of the UAW strikes stem from a desire for a master contract, others from unsettled grievances over production standards or disciplinary measures taken by companies against some of their men. Tool and die walkouts have been precipitated by upgrading of semiskilled men, by wage rate disputes and by alleged dispersal of die work. Companies with GM-type long-term contracts have not been exempt from the trouble.

Whether settlement can be reached on some of the most throttling strikes—such as those against Borg-Warner divisions — before auto and truck production begins to suffer, only time will tell. Meanwhile, however, some suppliers' salesmen are in a fools' paradise and automakers' buyers are in a dither.

GM Divisions Merge

General Motors' last week merged its Allison Division, headquartering at Indianapolis, and Aeroproducts Division, Dayton. Aeroproducts is a leading propeller designer and builder. Allison is the country's largest builder of gas turbine engines for aircraft.

The joining of these two complementary organizations indicates a General Motors' belief that the turbine engine-propeller combination has a big commercial future, and one which can best be capitalized on by better co-ordination between them.

Under the new consolidation, all Aeroproducts' employees move under Allison's wing, their operation at Dayton being identified as Aeroproducts-Allison Division. Their new boss is GM vice president and Allison general manager, E. B. Newill.

One gain of the shuffle will be closer contact of the engineering staffs of the two organizations; another will be the joint use of the elaborate testing facilities which both divisions maintain and are expanding. Allison engine production will be aided by the use of certain Aeroproducts' facilities for parts and sub-assemblies man-

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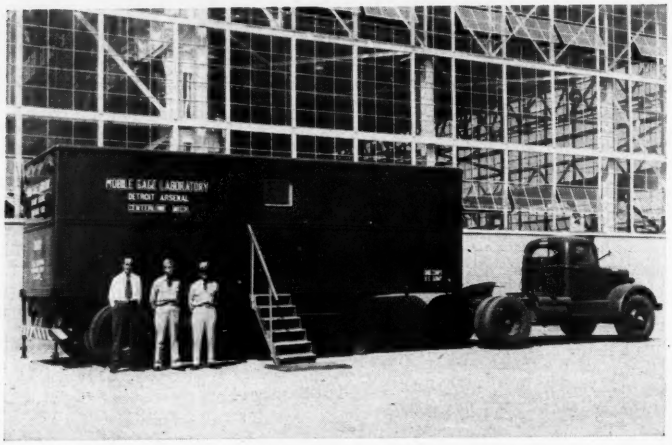
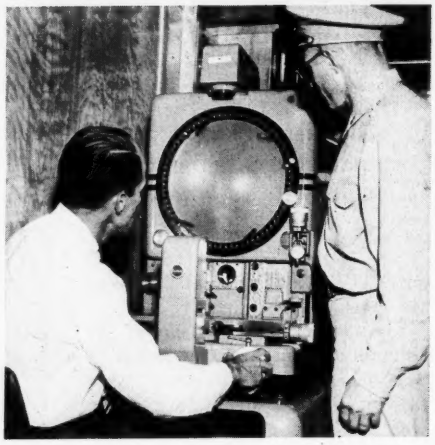


DETROIT ARSENAL'S MOBILE GAGE LABORATORY
. . . contains about $30,000 worth of equipment



KODAK CONTOUR OPTICAL PROJECTOR
. . . just one of many gages in lab

ufacture. Mr. Newill makes it clear that the consolidation won't freeze out outside manufacturers with which the separate divisions have been co-operating. "Aeroproducts," he said, "will continue to work with other engine manufacturers regarding the use of aeroprops. At the same time Allison will co-operate with other propeller manufacturers in matching their propellers with Allison engines."

Whether this new liaison will have any bearing on Allison's forward-looking work in vehicle-propelling gas turbines or torque converters cannot be established, but it is certain that the join-up will signal a new emphasis on General Motors' interest in aircraft as it pertains to turboprop - driven planes. For short hops and for America's flying field conditions where "stack up" of planes is common, the fuel-thrifty turboprop planes are believed to have it over Britain's jet job like an umbrella.

Gage Trailer Takes to the Road

In the Detroit Ordnance District there are only a handful of companies with gage inspection facilities which can match those contained in an insulated trailer which the Gage Engineering Division of Detroit Arsenal has put on the road. This is the boast of Rudolph Spall, the mobile gage laboratory's designer. Mr. Spall's pride is pardonable and his claim probably legitimate, for the trailer-contained setup appears to be complete enough to check every gage in every shop which does business with the Ordnance district.

The laboratory is designed as a time-saver. In it Ordnance's gage inspectors can travel throughout the district performing surveillance inspection on gages at their users' plants, instead of waiting until the gages can be sent in to centrally located laboratories for periodic check-ups. Because of delays sometimes encountered in that time-consuming procedure one of two things could happen: Production could suffer, or gages would not get sent out as soon as they should have been. At the suggestion of the National Gage Center, Frankford Arsenal, the project to put gage inspection on wheels was initiated back in March, 1950.

The unit built for DOD may be the forerunner of similar ones for each Ordnance district. There may be some difference in the equipment carried depending on the particular needs in each district, but basically each trailer will take its design from Detroit's lead. Housed in a standard commercial six-ton trailer, built by Ketals Mfg. Co., St. Clair Shores, Mich., an ice cream truck specialist, the laboratory contains about $30,000 worth of master gages and inspection instruments.

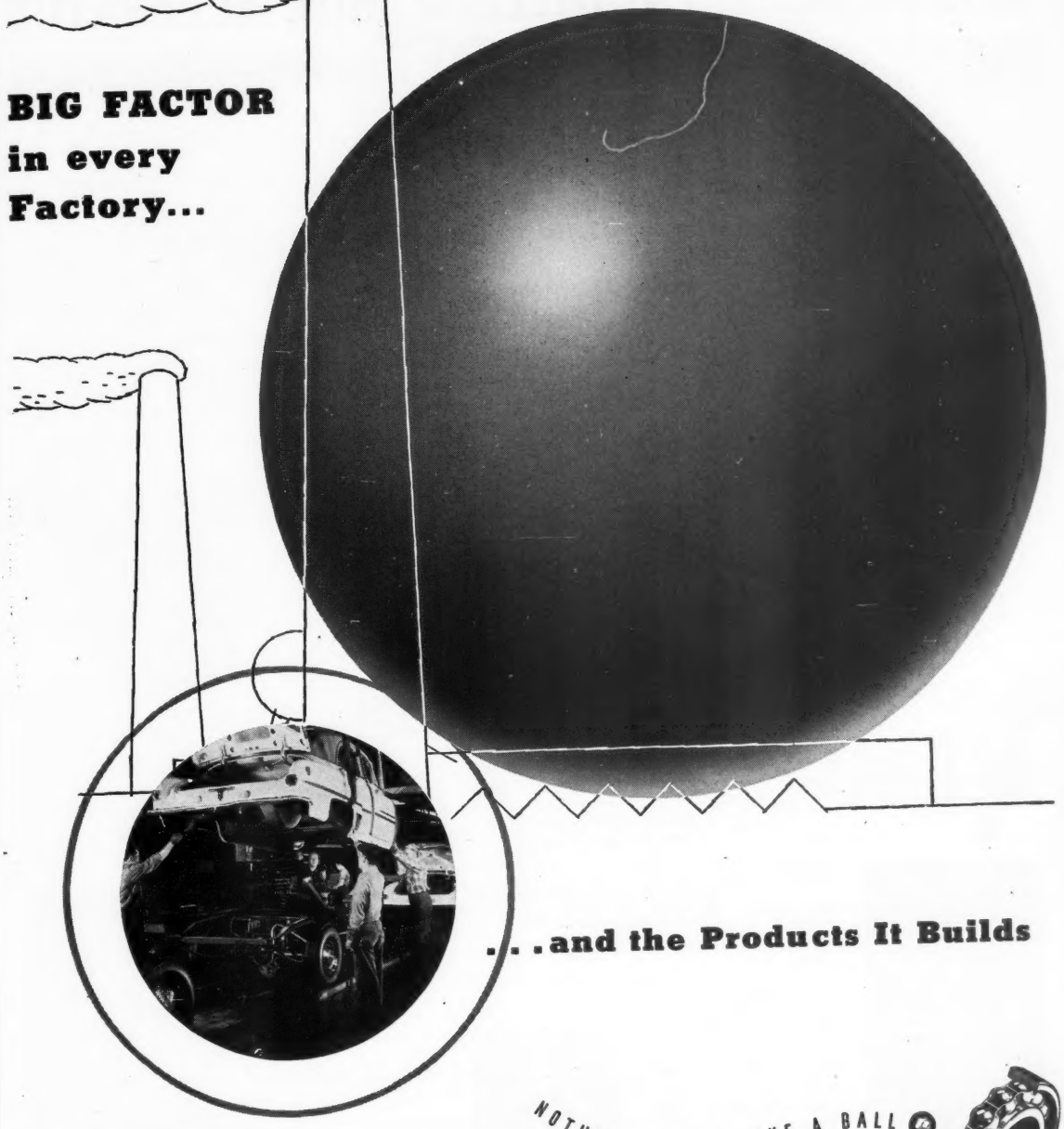
Major instruments include a Pratt & Whitney length measuring device, accurate to 0.00001 inch, a Kodak contour optical projector with vertical and horizontal light sources, capable of 100 magnifications, two Sheffield comparators, a P & W super-micrometer for measurements to 0.0001 inch, a General Motors surfagage for roughness measurement. In addition to three granite surface plates, the laboratory is also equipped with a massive complement of plug, wire and block sets for gage checking.

Secrecy Slips on New DeSoto

Despite elaborate precautions, some of the 1953 models have been glimpsed by Detroiters as they were shown to dealer staffs. One of these is the new DeSoto which sports a completely new body. It is still immediately distinguishable as a DeSoto from its grille work and air-scoop hood, but its similarity to the current model ends there.

From the one-piece windshield to the squared-off rear fenders the new model has picked up many of the styling features which began setting the trend this year. The entire trailing edge of the rear fender is devoted to tail light. The rear window wraps around to the rear door posts. The trunk has been nestled between the rear fenders. Most eye-catching, however, is the lavish use of chrome trim. This shows up particularly in the very wide band extending the length of front and rear fenders, and chrome "gravel shields" diagonally down from this strip on the front and rear fenders. This is in addition to the chrome trimmed rocker panel under the doors and extending the length of the body.

BIG FACTOR in every Factory...



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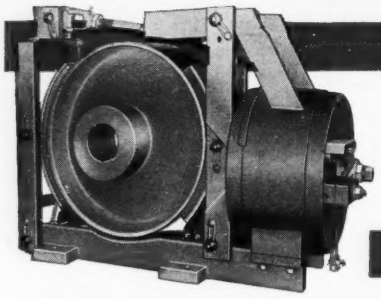
CLARK ENGINEERED MILL APPARATUS

SAVES $ $ For You

All CLARK Mill Control Apparatus is built not only for heavy-duty service, but also engineered for simple and easy maintenance.

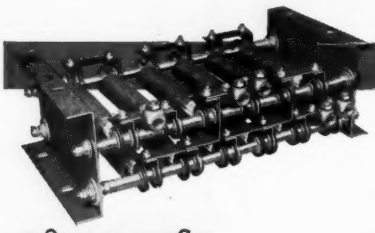


SIMPLICITY

One adjustment corrects lining wear and magnet air gap at the same time on CLARK Shoe Brakes. All adjustments are made at the *top*—not at bottom, sides or ends, but *ON TOP*, where you can see and get at the job. Self aligning shoe guides automatically maintain the shoes in concentric position, eliminating tipping and dragging.

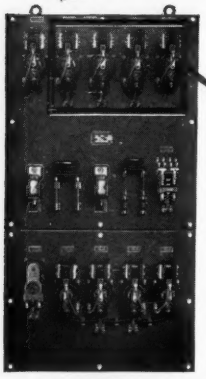
RUGGEDNESS

CLARK Cam Operated Mill Master Switches feature heavy cast metal enclosures, Needle Roller Bearings, easily accessible wiring, durable cams with square holes to fit the square shaft. The rugged finger mechanism which also fits 6 other mill type switches, can be removed with a simple twist of the fingers and replaced just as easily.



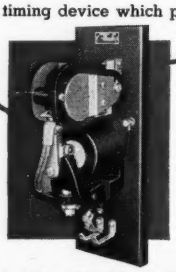
COMPACTNESS

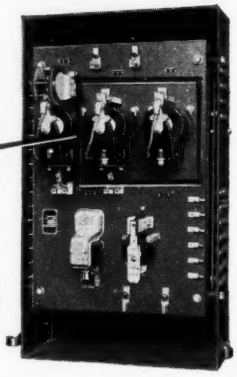
Welded Terminals feature these new Type 3M Edgewood Resistors, which are mounted in two offset rows of 6 units each. ZIG ZAG mounting of units results in space saving and provides a greater degree of cooling. All terminals are pressure type and are located at the ends of the units. Units may be connected in series or parallel combinations. "On the spot maintenance"—no need to rebuild bank in shop.



DEPENDABILITY

All CLARK DC Mill and Crane Control and Mill Type Starters center about the DC Varitime Contactors and Relays. Each Varitime Contactor and Relay incorporates, within itself, a timing device which provides an adjustable preset time delay before it closes. This simplifies wiring, eliminates a separate timing device, and only a minimum number of spare parts are needed, as main and accelerating contactors use interchangeable parts.





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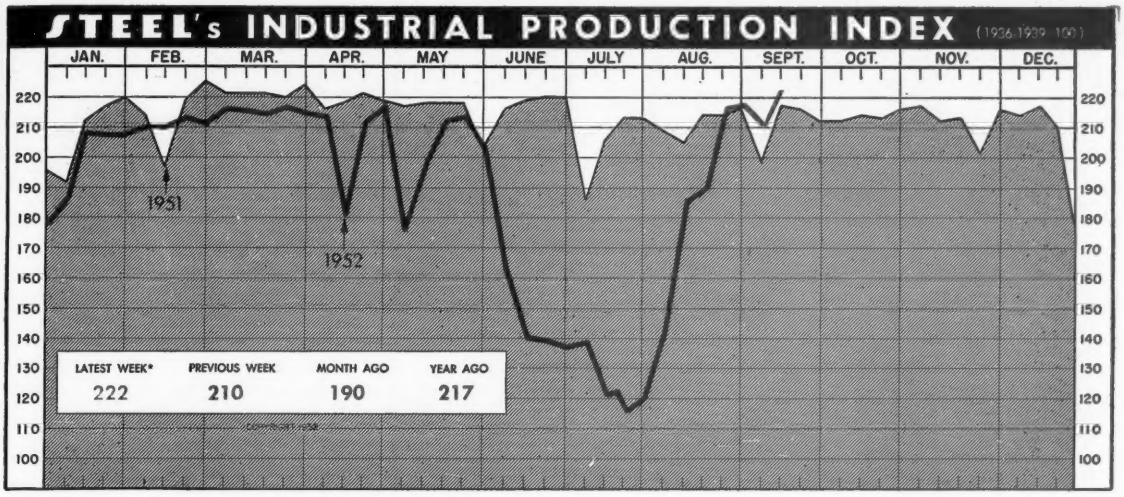

STEEL's INDUSTRIAL PRODUCTION INDEX (1936-1939 = 100)
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
220 210 200 190 180 170 160 150 140 130 120 110 100
1951
1952
LATEST WEEK* 222
PREVIOUS WEEK 210
MONTH AGO 190
YEAR AGO 217

*Week ended Sept. 13 Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 20%.

Industrial outlays for new plant and equipment are now at a peak. Industrial activity index soars to highest level for this year as auto output and freight car loadings climb

INDUSTRIAL outlays for new facilities are now at a peak rate.

Total investment in new plant and equipment will hit an annual rate of about $27.7 billion in the third quarter, says the President's Council of Economic Advisors in its September survey. That's a hefty increase of $370 million over the previous quarter and $390 million above the annual spending rate during the third quarter, 1951. Expenditures may take another rise to a $28.7-billion annual rate in the final quarter of 1952, says the council's report.

Clouding — Manufacturers account for the bulk of the increased spending. Industrial expenditures are expected to rise $500 million to an annual rate of $12.7 billion this quarter. Danger signs, however, are clouding the outlook for the period when defense expenditures start to flatten out in the early months of 1953.

Indicating perhaps an uneasiness among businessmen dependent on consumer demand, investment in new facilities has been falling off in the committee's Commercial and Miscellaneous category. Expenditures in this classification—which includes trade, service, finance and communication companies—are scheduled to drop to $6.7 billion this quarter. That marks an almost steady decline in spending during the past two years. The question is, will civilian industries spend more when materials are more available? Another defense stretchout may well push down consumer demand, which is now just starting to show signs of recovery from the slump following the post-Korea spending spree.

Year's Peak—Spurred by industry's push to recoup losses from the steel strike, STEEL's industrial activity index shot up to 222 per cent of the 1935-1939 average during the week ended Sept. 13. That's the highest reading since March, 1951. Main impetus in the rise was supplied by auto-truck output and freight car loadings. Automotive operations reached a record turnout for the year, while car loadings neared the high-for-the-year mark set in August.

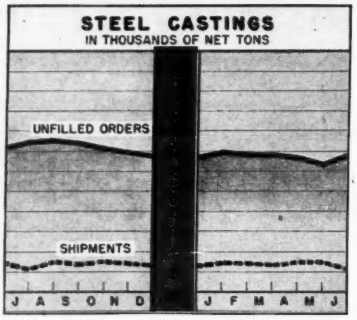
Steel Turnout Edges Up . . .

Steel plants are boosting output to fill military orders accumulated during the industry strike. At present, steel producers expect to start work on current defense orders at the end of this month. While many civilian steel users waited their turn, U. S. plants edged output up to 2,115,000 net tons of steel for ingots and castings in the week ended Sept. 20, says the American Iron & Steel Institute. This output compares with 2,093,000 tons in the previous week.

Auto Output Hits Year's Peak . . .

Automakers are setting new output records for the year, as the industry drives to make up losses caused by the steel strike. U. S. plants shoved 128,508 autos and trucks off assembly lines in the week ended Sept. 13, says *Ward's Automotive Reports*. That's the best turnout in 12 months and it easily topped the previous highest weekly total of 124,832 units produced in the week ended Apr. 26.

Passenger car assemblies are the main factor in the high weekly totals. Carmaking in the week ended Sept. 13 soared to 103,054 units, shadowing the 84,865 units built a week earlier and going comfortably above the pre-strike weekly average of 95,000 passenger cars. Truck production has made a less spectacular showing. Turnout in the week ended Sept.

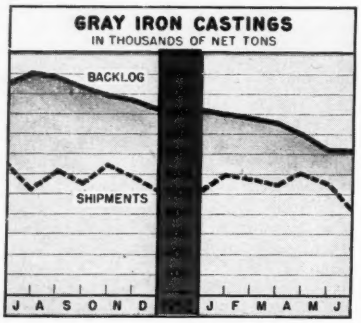


Steel Castings

Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1952	1951	1952	1951
Jan.	183.7	174.1	869.3	675.4
Feb.	174.6	164.0	856.9	707.4
Mar.	173.7	190.7	857.1	779.7
Apr.	175.1	181.9	843.0	846.9
May	173.6	189.2	804.7	881.7
June	141.6	184.7	846.5	895.1
July	....	147.2	....	930.0
Aug.	....	177.1	....	944.2
Sept.	....	160.7	....	918.0
Oct.	....	189.9	....	891.5
Nov.	....	176.7	....	865.0
Dec.	....	165.1	....	846.4
Total	....	2,093.3		

*For Sale. U. S. Bureau of the Census.

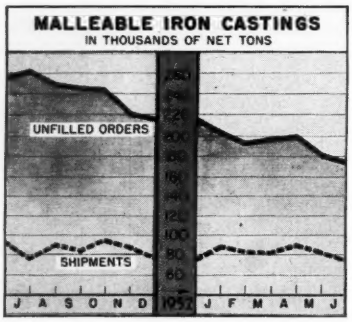


Gray Iron Castings

Thousands of Net Tons

	Shipments		Backlogs*	
	1952	1951	1952	1951
Jan.	1,199	1,364	1,801	2,298
Feb.	1,155	1,234	1,766	2,392
Mar.	1,172	1,440	1,711	2,390
Apr.	1,205	1,363	1,614	2,337
May	1,101	1,396	1,459	2,229
June	835	1,309	1,445	2,162
July	....	1,029	....	2,208
Aug.	....	1,219	....	2,145
Sept.	....	1,115	....	2,055
Oct.	....	1,302	....	1,983
Nov.	....	1,184	....	1,934
Dec.	....	1,032	....	1,847
Total	....	13,768		

* For sale. U. S. Bureau of the Census.

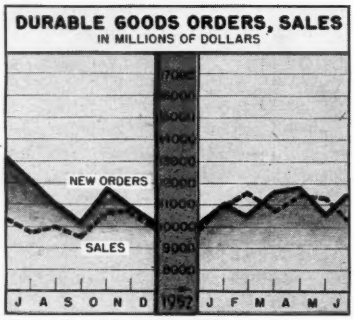


Malleable Iron Castings

Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1952	1951	1952	1951
Jan.	87.0	92.5	203	234
Feb.	82.9	89.0	193.1	255
Mar.	81.0	101.7	196.9	267
Apr.	89.3	97.3	198.2	276
May	81.8	100.8	180.4	275
June	74.4	93.7	173.4	256
July	...	76.8	...	263
Aug.	...	90.7	...	249
Sept.	...	82.3	...	245
Oct.	...	93.9	...	238
Nov.	...	88.2	...	221
Dec.	...	76.0	...	215
Total	...	1,082.9		

*For sale. U. S. Bureau of the Census.



Durable Goods Orders, Sales

In Millions of Dollars

	New Orders		Sales*	
	1952	1951	1952	1951
Jan.	11,287	15,050	10,941	10,430
Feb.	10,876	13,474	11,493	10,390
Mar.	11,712	15,542	10,743	10,851
Apr.	11,893	12,987	11,407	10,739
May	10,538	12,406	11,481	11,150
June	11,519	13,257	10,291	10,383
July	.....	12,235	.....	9,666
Aug.	.....	11,032	.....	10,028
Sept.	.....	10,344	.....	9,508
Oct.	.....	11,956	.....	10,660
Nov.	.....	11,031	.....	10,732
Dec.	.....	10,312	.....	9,786

*Seasonally adjusted. U. S. Office of Business Economics.

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Issue Dates on other FACTS and FIGURES Published by STEEL

Construction .....Sept. 15	Indus. Production..Sept. 15	Ranges, Elec. .....July 28
Employ., Metalwkg.Sept. 8	Ironers .....Aug. 25	Ranges, Gas .....July 28
Employ., Steel ....Apr. 28	Machine Tools ....Sept. 1	Steel Forgings ...Sept. 15
Fab. Struc. Steel..Sept. 1	Pumps .....Sept. 1	Steel Shipments ...July 23
Foundry Equip. ..Sept. 1	Prices, Consumer ..Sept. 8	Vacuum Cleaners ..Aug. 18
Freight Cars .....Aug. 25	Prices, Wholesale..Sept. 8	Wages, Metalwkg..Sept. 8
Furnaces .....Aug. 25	Radio TV .....July 21	Washers .....Aug. 18
Gear Sales .....Sept. 15	Refrigerators .....July 28	Water Heaters ....Aug. 18

13 reached 25,454 trucks, about equal to the average output in the pre-strike weeks this year. Higher truck operations are expected at the end of September.

U. S. and Canadian auto-truck operations reached 138,001 units in the week ended Sept. 13. That's well above output in the previous week, when Labor Day trimmed assemblies to 111,095 units, and 1849 units above auto-truck turnout in the same week, 1951.

Business Outlook Brightens . . .

Business conditions in August improved over those of the past several months, says Purchasing Agents Association of Chicago after a member survey. Production moved upward last month after an eight-months decline. Deliveries in August, however, increased only 3 per cent. Buying policy remained at short-term levels, as the majority of purchasing agents said they probably could fill their bins on quick notice. Reports of rising order backlogs doubled in August, with most of the rise being reported by buyers whose backlogs previously were declining.

Looking ahead, the purchasing agents tended to take an optimistic view. Some 47 per cent of the surveyed members predicted better business, 43 per cent believed business would be about the same and only 10 per cent saw a worsening of business conditions during the rest of 1952.

Construction Record Set . . .

Outlays for new construction in August rose 2 per cent seasonally to $3152 million, the highest monthly total on record, says the Bureau of Labor Statistics. Private industrial building continued its downtrend by dipping 1.1 per cent to $178 million, while public industrial construction rose 2.8 per cent to $186 million. That's 78 per cent over public industrial outlays on building during July, 1951.

New private home building accounted for a fat 46 per cent of the private outlays by rising 2.9 per cent to $1053 million. Defense outlays—chiefly for military, naval and atomic energy facilities—totaled $152 million or 30 per cent of the public outlays. Another 30

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	101.0	100.0	100.0
Electric Power Distributed (million kwhr)	7,654	7,324	7,137
Bituminous Coal Output (daily av.—1000 tons)	1,517	328	1,550
Petroleum Production (daily av.—1000 bbl)	6,500[1]	6,441	6,278
Construction Volume (ENR—millions)	$264.6	$110.0	$189.2
Automobile, Truck Output (Ward's—units)	138,001	111,095	136,150
TRADE			
Freight Car Loadings (unit—1000 cars)	800[1]	746	850
Business Failures (Dun & Bradstreet, number)	91	110	164
Currency in Circulation (millions)[3]	$29,364	$29,391	$28,216
Dept. Store Sales (changes from year ago)[3]	−1%	+4%	−10%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$14,951	$12,926	$14,918
Federal Gross Debt (billions)	$262.8	$262.9	$256.6
Bond Volume, NYSE (millions)	$14.4	$10.1	$16.4
Stocks Sales, NYSE (thousands of shares)	6,099	4,337	10,929
Loans and Investments (billions)[4]	$75.2	$75.5	$70.4
United States Gov't. Obligations Held (billions)[4]	$32.0	$32.2	$30.8
PRICES			
STEEL's Weighted Finished Steel Price Index[5]	181.40	181.40	171.92
STEEL's Nonferrous Metal Price Index[6]	223.2	223.2	224.6
All Commodities[7]	111.5	111.7	115.0
All Commodities Other Than Farm and Foods[7]	112.6	112.8	116.6

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1951, 1,999,035; 1952, 2,077,040. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

per cent of public expenditures on new construction went for highway work.

Refrigerator Demand Rises . . .

Makers of heavy electrical goods are enjoying a mild sales boom in line with the general uptrend in heavy civilian durables. Sales of electric refrigerators reached 366,372 units during July, says the National Electrical Manufacturers Association. That's only slightly lower than sales in the previous month, the highest sales month since April, 1951. The 366,372 units sold in July tower above the 163,922 units of the same month last year, but are well under the 507,029 units sold in July, 1950.

Electric ranges are also warm items on the appliance market. Sales of household electric ranges in July reached 84,325 units, slightly under the June sales and the second highest monthly sales since November, 1951.

Store Sales Slump . . .

Retailers again are finding a business slowdown, despite the lifting of many credit restrictions. Sales of the nation's department stores in the week ended Sept. 6 fell 1 per cent below the year-ago sales, says the Federal Reserve Board. This is a substantial drop, considering that the year-ago volume was, in itself, a whopping 10 per cent below the like week in 1950.

Primary Prices Rise . . .

Wholesale prices rose 0.3 per cent in August, marking the second consecutive monthly increase since prices started to decline in November, 1951, reports the Bureau of Labor Statistics. Metals and metal products rose 1.6 per cent in August, while machinery and motive products remained at the previous month's price levels.

Trends Fore and Aft . . .

Operating revenues of Class I railroads totaled $5.9 billion in the first seven months of 1952, compared with $5.8 billion in the same months last year. . . Intercity tonnage carried by Class I motor carriers in the second quarter dropped 3.4 per cent under the same quarter of 1951. . . General Electric Co. says its sales of major appliances improved considerably in the second quarter. . . Shipments of barrels and drums in July dropped 21 per cent under July of last year. . . Bank debits in 342 leading centers in August rose 8 per cent over debits in August, 1951.

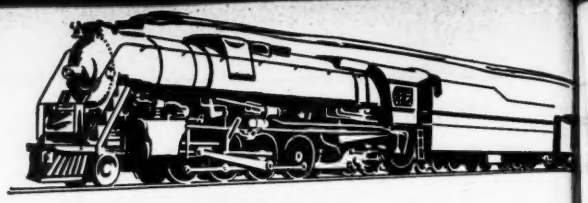
For Fast Dependable WAREHOUSE SERVICE

Rely on VIKING

- COLD FINISHED BARS—Rounds Hexagons, Flats and Squares
- ALLOY COLD FINISHED BARS
- HOT ROLLED BARS—Rounds Flats and Angles
- STRUCTURALS—Channels Angles and Beams
- HOT ROLLED PLATES
- ABRASION RESISTING PLATE
- HOT ROLLED AND COLD ROLLED SHEETS
- HOT ROLLED STRIP
- YOLOY PRODUCTS—Angles Flats, Plate and Sheets
- DEFORMED REINFORCING BARS
- WELDED WIRE MESH
- SOFT BLACK ANNEALED WIRE
- BRIGHT BASIC WIRE AND WIRE RODS
- WIRE ROPE AND FITTINGS

VIKING STEEL COMPANY
16700 St. Clair Ave.
CLEVELAND 10, OHIO

1003 Fisher Bldg., Detroit 2, Mich.



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Greater production facilities and delivering more Ohio Rolls mean speedier shipping of vital rolled metal products. Choose from 11 types of Ohio Iron and Steel Rolls:

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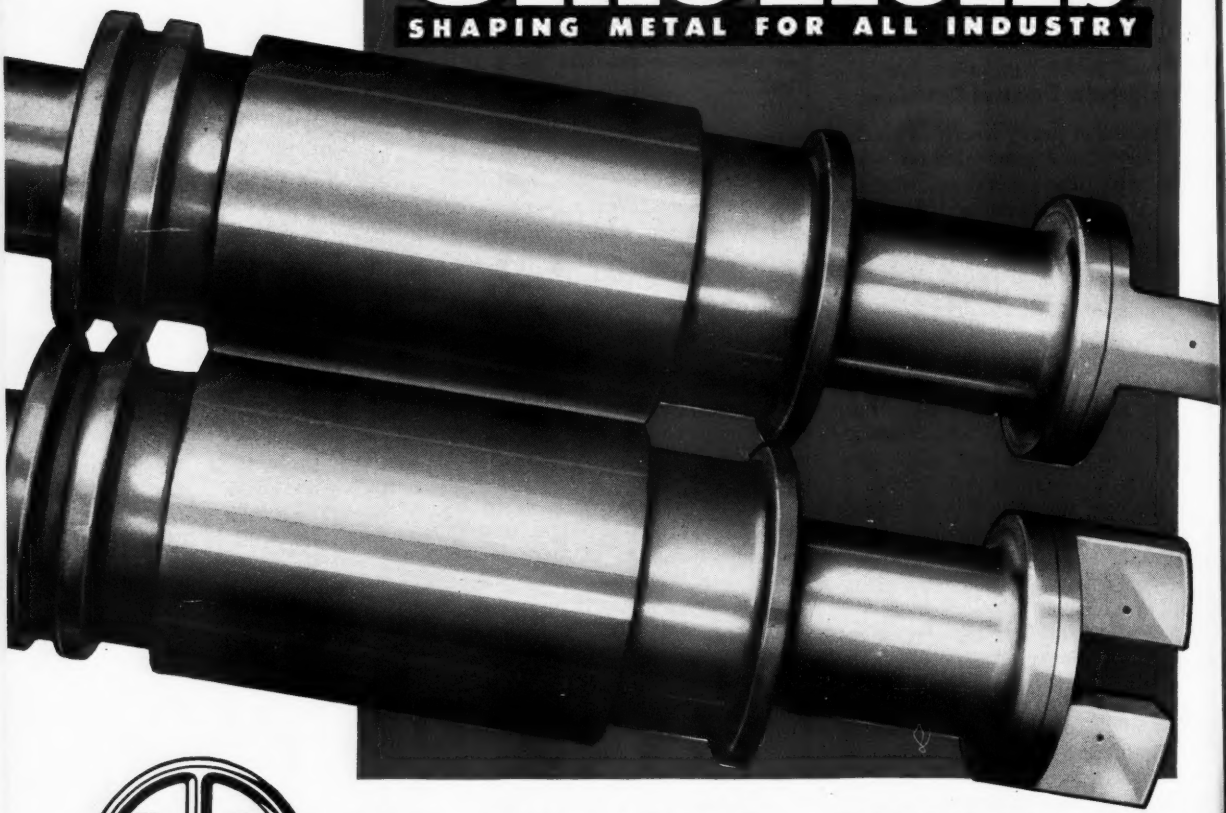
Ohioloy Rolls
Ohioloy "K" Rolls
Holl-O-Cast Rolls
Chilled Iron Rolls
Ohio Double-Pour Rolls
Denso Iron Rolls
Nickel Grain Rolls
Special Iron Rolls
Nioloy Rolls
Flintuff Rolls

Ohio Rolls

SHAPING METAL FOR ALL INDUSTRY



THE OHIO STEEL FOUNDRY CO.

LIMA, OHIO • PLANTS AT LIMA AND SPRINGFIELD, OHIO

Men of Industry

NELSON G. SPOTH
. . . Kolcast vice president-sales

SHELLER L. STEINWENDER
. . . joins Scaife as V. P.-sales

JOHN D. PETERS
. . . purchasing post at U. S. Steel

Nelson G. Spoth was promoted from sales manager to vice president in charge of sales of **Kolcast Industries Inc.**, Cleveland.

Harlan K. Perrill was named manager, engine division, Burbank, Calif., for **Pacific Airmotive Corp.** to succeed **L. B. Littrell**, now general manager, aircraft operations.

Dr. Jason Saunderson of Dow Chemical Co.'s research department was appointed director of engineering at **Baird Associates Inc.**, Cambridge, Mass. **David Z. Robinson** and **W. G. Langton** were made assistant research directors.

Wilson Oelkers was appointed general purchasing agent of **Philco Corp.**, Philadelphia. **Merle N. Thompson** succeeds Mr. Oelkers as purchasing agent, radio and television divisions.

Isabelle Roughead was elected president, **Excelsior Steel Ball Co. Inc.**, Buffalo. She is sister of the late **David Roughead**, founder of the company. **Jane Keil**, a director, was elected vice president.

Allied Products Corp., Detroit, appointed **Merle E. Kremer** assistant to the president and **Wynne R. Lilly** supervisor of new product development.

Sheller L. Steinwender was elected to the new position of vice president-sales of **Scaife Co.**, Pittsburgh. Since 1944 he has been general sales manager of the eastern district of A. O. Smith Corp., located in New York.

E. F. Gormsen was appointed director of purchases, Chevrolet Motor Division, **General Motors Corp.**, Detroit. He succeeds the late **G. M. Haley. K. E. Staley**, regional manager in Chicago, was named assistant general sales manager for Chevrolet in charge of the western half of the United States, and is succeeded by **W. R. Peel.** Mr. Staley succeeds **H. E. Crawford**, now general sales manager, Pontiac Motor Division.

Wagner Bros. Inc., Detroit, elected **O. H. Tiedeman** to the board of directors as vice president in charge of sales. He joined the company in 1947 as a sales engineer handling the Wagner-Tiedeman electroplating rectifier which he developed. Since then he has been chief engineer and operations manager.

Donald P. Frankel was made special assistant to director of engineering and manufacturing at **Marquardt Aircraft Co.**, Van Nuys, Calif.

John D. Peters was appointed manager of purchasing research in **United States Steel Co.'s** purchasing division, Pittsburgh. He has been staff assistant to the assistant executive vice president-accounting. **L. L. Lewis** was made general solicitor for the steel company, and **A. L. Mulling** and **R. Hearth Larry** become assistant general solicitors.

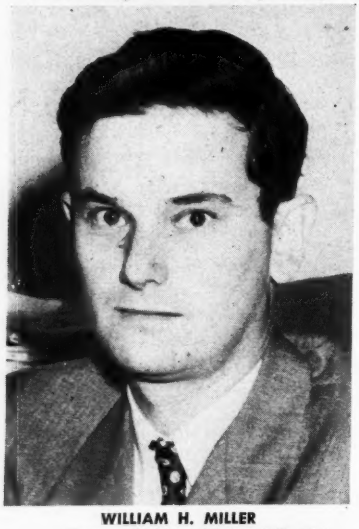
Elmer A. Koenig was promoted to sales manager, **Yoder Co.**, Cleveland. He has been assistant sales manager for the last three years.

Vincent F. Flaherty was appointed plant manager of **Yale & Towne Mfg. Co.'s** new lock and hardware factory under construction at Gallatin, Tenn. He has been serving as special assistant to the general manager.

Norman Dirks, since 1947 chief metallurgist with Perfection Tool & Metal Heat Treating Co., joined **Modern Steel Treating Co.**, Chicago, as technical director. He also has charge of all manufacturing operations plus developments and laboratory research.

Effective Nov. 1, **Earl J. Mills** will become manager, Chicago branch sales office, **Diamond Alkali Co.**, to succeed the late **Charles W. Klaus**, and **John W. Kennady** will be

C. R. SIZEMORE
. . . Pittsburgh Coke & Chem. plant mgr.



WILLIAM H. MILLER
. . . Bowser division chief metallurgist

CARL H. MUELLER
. . . eng. dir. at Lincoln Engineering

manager, southwest district sales office, Houston headquarters.

Pittsburgh Coke & Chemical Co., Pittsburgh, promoted **C. R. Sizemore** from manager of basic operations to general plant manager in charge of its Neville Island plant operations.

James M. McWhirter, formerly southern works manager, **Pennsylvania Salt Mfg. Co.**, Philadelphia, was appointed manager of the Wyandotte Works. He replaces **G. A. Nelson,** assigned to general engineering and consultative work in connection with Pennsalt's current expansion and plans for future developments.

National Metal Products Co., Pittsburgh, appointed **Samuel A. McClung** assistant vice president.

William H. Miller, metallurgical engineer in Connecticut currently serving on the executive committee of the Hartford chapter of American Society for Metals, joined **Bowser Technical Refrigeration Division,** Bowser Inc., Terryville, Conn., as chief metallurgist. **Jack Shamroth** was elected vice president, manufacturing and engineering; **Thaddeus Augustyn,** production manager and a member of the management committee. **Norman Miller,** chief engineer, was named to head the drafting department with **Carl Schechtman** as chief draftsman.

Lincoln Engineering Co., St. Louis, manufacturer of lubricant application equipment, appointed **Carl H. Mueller** director of engineering. He formerly was assistant to the president in charge of product development. The staff of the engineering and research department remains intact with **L. C. Rotter** as chief engineer.

Management promotions in **U. S. Steel Co.'s** Homestead District Works, Homestead, Pa., include **William G. Walk** to succeed **W. W. Sherer** as division superintendent-maintenance and **W. T. Smith** and **C. J. Degenhardt** as assistant division superintendents - maintenance. **Robert O. Thomas** becomes division superintendent, heat treating and forge department, and is succeeded by **Edward E. McGinley** as open-hearth division superintendent. **Lewis A. Hovey** advances from superintendent of open hearth No. 5 to assistant division superintendent, open hearth and foundry, and is succeeded by **William E. Brandt,** formerly superintendent at open hearth No. 4.

Inland Steel Container Co., Chicago, appointed **John H. Strome** sales manager and **Thomas T. Crowley** as assistant to the president.

William E. Haskell was appointed assistant division superintendent of primary mills, Youngstown District Works, **U. S. Steel Co.** He succeeds **Edwin J. Blanning,** transferred to the company's Gary, Ind., Works as division superintendent, central mills.

C. B. Lewis was promoted to assistant chief inspector, **Temco Aircraft Corp.**, Dallas.

Matthew S. Stolarz, recently released by the U. S. Marines, has resumed his duties on the staff of **American Machine & Foundry Co.'s** International Group as supervisor of sales of DeWalt products at Lancaster, Pa.

R. C. Somerville was elected vice president and a director of Plymouth Motor Corp., a subsidiary of **Chrysler Corp.**, Detroit. He continues as general sales manager of Plymouth, a position he has held since 1947. **William M. Williams** was appointed superintendent of planning at the Chrysler Detroit Tank Plant, **U. B. Wuolukka** as chief inspector, **A. F. Kanner** as master mechanic and **O. W. Olson** as traffic supervisor.

Richard H. Frost was promoted to chief engineer, **Stanley Aviation Corp.**, Buffalo.

Diesel Power Inc., Pittsburgh, elected **R. A. Wells** to its board of directors. For the last several years he has held the post of chief fuels and lubricants engineer in the aviation section of Gulf Oil Corp.

L. Camel was promoted to divisional general sales manager, industrial chemical division, **Detrex Corp.**, Detroit, and **D. E. Williard**

You're sighting on the moose through a Weaver Scope, made by W. R. Weaver Company, El Paso, Texas

The Superior Tube That Puts You "On Target"

Hitting specification bull's-eyes to help our customers hit their production targets is a Superior specialty.

A case in point is illustrated above. The customer, W. R. Weaver Company manufactures high-quality telescopic sights for sporting and target rifles. The carbon steel tube in which the lens elements, reticule and eye piece are mounted must be strong and rigid. Tube material must have excellent machining qualities to permit fast, economical, precision working. Because salability depends a good bit on fine appearance, the tube must be extremely smooth and free from pits and scratches. This is particularly true of the larger sizes where tube ends are expanded, making imperfections more evident. Inside surface must also be smooth and to accurate dimensions.

Ordinarily you might expect tubing to fit such requirements for smoothness plus temper and machinability would be a "premium" item carrying extra charges for special handling.

Not at Superior. Here we can take the most exacting specifications in stride because of our experience and "know-how" backed by highly developed production equipment and extensive research and testing facilities.

If you have need for fine, small tubing to do a tough job well, check with us. We can probably fill your requirements from the stocks of our distributors who are located in principal cities. Write Superior Tube Company, 2005 Germantown Ave., Norristown, Pennsylvania.

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THE BIG NAME IN SMALL TUBING

All analyses .010" to ⅜" O.D.
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A.I.S.I.—4130, 4132, 4140, 4150, 8630, E-52100

Stainless Steels:
A.I.S.I.—303, 304, 305, 309, 310, 316, 317, 321, 347, 403, 410, 420, 430, 446, T-5

Nickel Alloys:
Nickel, "D Nickel"*, "L Nickel"*, "Monel"*, "K Monel"*, "Inconel"*, 30% Cupro Nickel.

Beryllium Copper:

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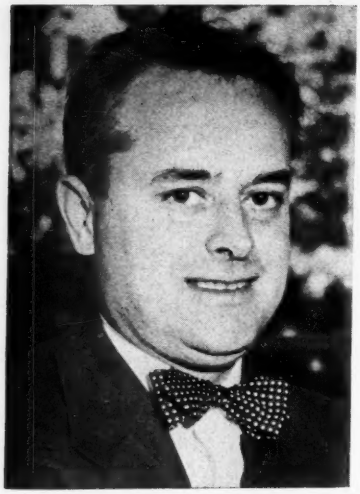

WILLIAM M. LAWRASON
. . . Atlas Steels Ltd. purchasing mgr.

CARL R. SARE
. . . elected V. P. of W. W. Sly Mfg.

FRANKLIN G. PARDEE
. . . heads Lake Superior Iron Ore Assn.

to divisional general sales manager of the industrial equipment division.

William M. Lawrason was appointed manager of purchasing, **Atlas Steels Ltd.**, Welland, Ont. He formerly was assistant purchasing agent with Steel Co. of Canada Ltd., Hamilton, Ont. At Atlas he will be assisted by **C. K. Edward,** purchasing agent, and **C. H. Randall,** assistant purchasing agent.

W. J. Thomas, general sales manager, Tubular Products Division, **Babcock & Wilcox Co.,** Beaver Falls, Pa., was named to the board of directors of the division.

Carl R. Sare, formerly assistant to the president, Patterson Foundry & Machine Co., East Liverpool, O., was elected vice president, **W. W. Sly Mfg. Co.,** Cleveland, where he will be primarily concerned with promoting dust filter sales.

Robert C. Wacker was appointed general manager of **Blackhawk Mfg. Co.'s** recently created hydraulic control division, Milwaukee.

Orman P. Dulac was appointed manager of the Depew, N. Y., plant, **Gould - National Batteries Inc.** He succeeds **C. Ernest Smith,** named manager of the firm's new plant in Kankakee, Ill.

Franklin G. Pardee was appointed president, **Lake Superior Iron Ore Association,** Cleveland. He takes the position formerly held by **M. D. Harbaugh** who died in March. Mr. Pardee has been Michigan state geologist since July, 1951.

Eric O. Prange, formerly tool and plant engineer with Michigan Steel Casting Co., joined **Claud S. Gordon Co.,** Chicago, as Detroit district manager.

Inland Steel Products Co. named **Robert F. Marsh** assistant manager, Chicago branch, and **Robert H. Ladewig** assistant manager at Detroit.

OBITUARIES...

Paul B. Greenawald, 58, vice president in charge of production and a director of **Carpenter Steel Co.,** Reading, Pa., died Sept. 4.

Joseph Carcione, 47, purchasing agent of **Easton Car & Construction Co.,** Easton, Pa., died Sept. 11.

John P. McGuire, 70, former vice president and general manager, **Canadian Hoffman Machinery Co. Ltd.,** Toronto, Ont., died Sept. 7.

Thomas J. McCullough, 89, pioneer in the steel industry and one of six brothers who in the late 1800s built the **Ashland Sheet Metal Co.,** Ashland, Ky., which later was purchased by Armco Steel Corp., died Sept. 6.

Carl Jensen, retired vice president and controller, **A. M. Byers Co.,** Pittsburgh, died Sept. 6.

Harold Sack, 26, manager, **Hurwitz Bros. Iron & Metal Co. Inc.,** Buffalo, died Sept. 9.

M. M. Price, 72, until retirement six years ago sales manager of **Babcock & Wilcox Co.** in Philadelphia, died Sept. 11.

J. S. Mallory, 71, a former vice president and director, **Globe Automatic Sprinkler Co.,** Philadelphia, died Sept. 12.

Robert F. Tucker, 60, staff assistant to the vice president of **Westinghouse Electric Corp.'s** lamp division at Bloomfield, N. J., died Sept. 11.

George W. Lawrence, president and general manager, **Sangamo Electric Co. of Canada Ltd.,** Toronto, Ont., died Sept. 7.

Ralph M. Frank, 61, chief clerk at **Republic Steel Corp.'s** central alloy district, died in Canton, O., after a two-month illness.

STANDS UP UNDER THE SEVEREST FORMING

WICKWIRE

HARD DRAWN MB SPRING

WIRE

...Selected and Preferred for Zig-Zag Spring Wire in Automobile Seat and Back Cushions

Hard Drawn MB Spring Wire produced by Wickwire is used extensively as zig-zag spring wire in the construction of the latest ribbon type of spring units for automobile seat cushions.

Such wire demands the maximum degree of strength, ductility and uniformity in order to withstand the extremely severe deformation necessary in the fabrication of these springs. Painstaking care must be exercised in the selection of the right steel and in subsequent processing operations.

Wickwire Hard Drawn MB Spring Wire measures up in every way to these exacting demands because every step of its production, starting in our own open hearth furnaces, is under constant control, subject to uncompromising testing and inspection.

Widespread use of Wickwire Hard Drawn MB Spring Wire in this severe service is your assurance that when you select this high-carbon wire for your particular application, you can always count on getting the finest.

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THE CALIFORNIA WIRE CLOTH CORPORATION • Oakland, California
WICKWIRE SPENCER STEEL DIVISION • Atlanta • Boston • Buffalo
Chicago • Detroit • New York • Philadelphia

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PRODUCTS OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

125

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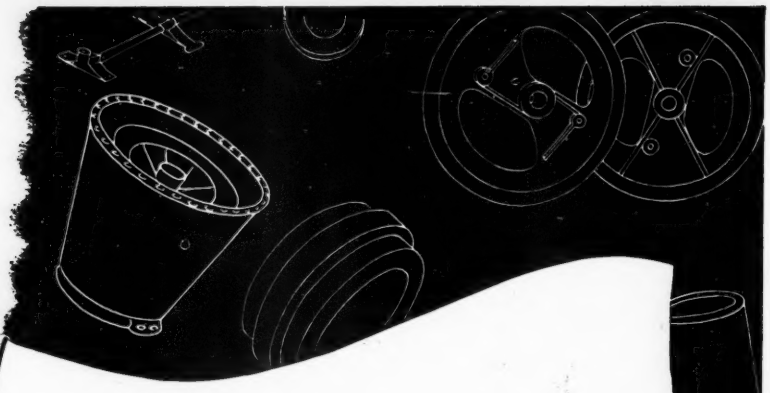

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Production AND Engineering
NEWS AT A GLANCE

WELDING DID IT—Can you weld large aluminum bus bars—is it practical? Standing proof that you can is the Reynolds Metals huge new San Patricio aluminum reduction plant. It includes what probably is the largest installation of aluminum bus bars in the world—10,000 tons. The bus bars carry more than 100,000 amp of direct current to the electrolytic cells that will produce 160,000,000 pounds of aluminum annually—and all of them were welded. The bars are in 40-42 foot lengths for straight runs and 5-39 foot for pot connections. Aircomatic welding machines, using 2S bare aluminum wire 1/16-inch diameter, fed into the arc at 100 inches per minute, did the trick.

POWER DOUBLED BY '64—Four times as much electric power will be available in the United States by 1964 as there was at the start of World War II. That's the prediction A. A. Johnson, electric utilities engineering manager for Westinghouse, made while addressing the American Institute of Electrical Engineers in Chicago. At that time, he says, installed electric power generating capacity will be 160 million kilowatts. The figure today stands at 80 million kilowatts. He expects installed capacity to increase about 7 per cent per year, thus doubling again in the next 10 years; and in 20 years to exceed 250 million kilowatts.

CLEVELAND'S "STEEL MILL ROW"—When the Association of Iron and Steel Engineers take over Public Auditorium in Cleveland, next week, the place will virtually be turned into steel mill row. Reports already indicate that coverage of various phases of production, operation and maintenance will be more complete than the 26 preceding shows. In this issue, you will find listed the manufacturers of equipment and suppliers who will take part, as well as the program for the week. p. 110

FAIRLESS—A DREAM SHAPING UP—A steel operating man's dream is shaping up on the Delaware river near Morrisville, Pa. It's a completely integrated steel mill with plenty of elbow room for expansion—3939 acres: One that not only incorporates the most modern steel equipment available but which is arranged to provide a more efficient flow of materials than now possible in older plants. The Fairless Works of U. S. Steel, which initially will swell ingot capacity by 1.8 million net tons annually from nine 275-ton open hearths, is big. It was big from the beginning and is destined to do big things. Its planning was big, and big men were required to do the planning. The plant's layout required 9.5 million man-hours of engineering, or the work of a long-lived engineer for 4750 years. Plant materials handling moves on 75 miles of railroad, 16 miles of improved highway and 3 miles of conveyors. One 1750-foot belt carries coal from dumper to coke works at 550 fpm; another 3600-foot conveyor carries ore and limestone from ship landing to blast furnaces. p. 121

WANTED: TESTING SPEEDUP—Apparently, the program to develop substitutes for diamond bort in grinding is not progressing as fast as the National Production Authority would like. Progress reports of several firms and government agencies working on substitute grinding processes, during a special meeting in Washington, indicated in all cases that further testing is required particularly in actual use to supplement lab tests. Anxious to speed up the program, NPA told attending technicians that it's ready to give every practicable assistance to accelerate testing in order to determine definitely how, to what degree, these and other processes can be substituted. Substitute processes under test are electrolytic, electro-sparking and ultrasonic.

TOO MUCH OR TOO LITTLE—Sometime next year, when a new steelmaking furnace goes into action, we will have added nearly 30 million tons of new steel capacity to the nation. That means American steel capacity will be lifted to 120 million tons annually. Will that be too much or too little to match the needs of the American economy? Steelmakers are frankly concerned. They believe our new steel capacity puts us in the position of a 12-year old boy in a 14-year old's suit. Don't overlook what leaders in American industry have to say. p. 114

NAVY'S CATAPULT BUILT HERE—The new steam catapult for aircraft carriers, developed by Great Britain and tested earlier this year by the U. S. Navy, is to be manufactured by McKiernan-Terry Corp., Harrison, N. J., and E. W. Bliss Co., Canton, O. First of the "steam slingshots" will be assembled with some parts shipped from Scotland, some made by these two firms. It will be "land-locked" at Naval Air Material Center, Philadelphia, for testing. First shipboard installation will be on the carrier Hancock.

IT CAN BE PUMPED THROUGH HOSES—A radically new construction material which, for the first time, enables contractors to fill forms with concrete pumped through hoses is revealed by Armour Research Foundation of Illinois Institute of Technology. Development also has potential applications as an ingredient of baked clay products—to make possible lightweight refractories and high-temperature insulating materials. It consists of tiny glass balloons made by blowing up individual grains of clay in a special furnace. Used in place of sand in concrete mixes, the latter becomes very fluid—even though water content is low. Material has a compressive strength greater than mixes made of sand.

Latest Technical Advancements Highlight Iron and Steel Engineers' Convention

Exposition and technical sessions with over 200 exhibitors and 39 papers scheduled for 13 separate sessions give promise of revealing innovations excelling those of former years

OPERATING men engaged in the iron and steel industry will be obliged to slow down their stride in making the rounds at the forthcoming exposition to be held at the Public Auditorium, Cleveland, Sept. 30 through Oct. 3, in conjunction with the 1952 convention of the Association of Iron and Steel Engineers—that is, if they want to take back a satisfactory report to the boss covering the new things along "steel mill row."

Preliminary reports indicate that the coverage of various phases of production, operation and maintenance will be more complete than the 26 preceding shows. Some 200 manufacturers of equipment and supplies for the steel industry have reserved booth space (See p. 163.) Many manufacturers will reveal the latest technical advancements and innovations in graphic or dramatic fashion.

Midway Attraction—One large maker of electrical equipment will stage a "Maintenance and Repair Theater" complete with feminine pulchritude as well as pantomime demonstrations of the company's maintenance services. Other displays will exhibit minutely detailed working models of steel plant equipment, including a blooming mill, a continuous billet and slab mill with complete auxiliary equipment, a cutaway and working model of a gas conversion furnace, and a cutaway mechanical turbine.

Various demonstrations including welding and cutting will dominate other displays. One manufacturer of materials handling equipment will present a sound color film showing the handling and transportation of coal and iron ore from mine to blast furnace.

Steelmaking Progress—The technical program includes 39 papers to be presented in 13 separate sessions and deals with specific problems of steel plant production, such as electrical, mechanical, combustion, blast furnace, lubrication, operating practice and rolling mill practice. To permit those attending to budget their time between exhibits and technical sessions, the program is arranged so that no topic will be discussed in both morning and afternoon sessions of the same day.

A large attendance is expected at the operating practice session at 9 a.m., Thursday, Oct. 2, at which Jacques Sejournet, general manager, Comptoir Industriel D'Etirage Et Profilage De Metaux, Paris, or his representative, will describe the recently developed method of extruding steel.

To the Point—He will explain why it will be necessary when working with high alloy steels and rare metals to employ presses with variable pressure in order to permit the performance of all operations on a single unit. He will also present several indications of cost in the form of comparisons.

Another live subject to be presented in the form of a paper deals with the injection of reformed natural gas into the critical zone of a blast furnace with oxygen enrichment of the blast and pressurized operation. The paper includes calculations which permit evaluating the relative costs of operation in regions where natural gas and coke costs differ materially. A direct comparison is made of coke and flux consumptions, blast temperatures, production rates, volume of gas used, and top gas analyses and volumes to afford direct comparison of expected costs with normal costs.

Iron and Steel Exposition Hours
Cleveland Public Auditorium

Tuesday, Sept. 30, 10:00 a.m. to 10:00 p.m.
Wednesday, Oct. 1, 10:00 a.m. to 10:00 p.m.
Thursday, Oct. 2, 10:00 a.m. to 5:30 p.m.
Friday, Oct. 3, 10:00 a.m. to 4:00 p.m.

Recovery Review—Experimental work done within the last two years with American Iron & Steel Institute assistance and sponsorship has demonstrated that at least three processes for the recovery of manganese from open-hearth slags are technically feasible. Progress that has been made on these processes will be described separately.

Officers of the Association of Iron and Steel Engineers for 1952 are: I. N. Tull, electrical superintendent, Republic Steel Corp., Cleveland, president; John L. Young, vice president—engineering, United States Steel Co., Pittsburgh, first vice president; E. L. Anderson, electrical superintendent, Bethlehem Steel Co., Johnstown, Pa., second vice president; John H. Vohr, general superintendent, Gary Works, United States Steel Co., Gary, Ind., treasurer; and W. H. Collison, assistant general superintendent, blast furnace division, Great Lakes Steel Corp., Ecorse, Mich., secretary.

1952 AISE CONVENTION
IRON AND STEEL EXPOSITION
PROGRAM

SEPTEMBER 30—OCTOBER 3—CLEVELAND

Exposition and Technical Sessions in Cleveland Public Auditorium
Social Functions at the Hotel Statler

TUESDAY, SEPTEMBER 30

9:00 a. m.—REGISTRATION—Main Lobby

9:15 a. m.—BUSINESS MEETING—Ball Room

9:30 a. m.—ELECTRICAL SESSION—Ball Room

Chairmen: A. J. F. MacQueen, electrical superintendent, Algoma Steel Corp. Ltd., Sault Ste. Marie, Ont., Canada.
W. J. Tunny, superintendent, electrical maintenance, Youngstown Sheet & Tube Co., East Chicago, Ind.

"Air Filters Applied to Cooling Systems of Electrical Rotating Equipment," by Fred C. Reutenauer, design engineer, Elliott Co., Ridgway, Pa.

"Transformer Oils for Modern Industry," by Andrew S. Morrow, staff engineer, lubricants department, Shell Oil Co., New York.

"A Simplified Automatic Ingot Buggy," by I. N. Tull, electrical superintendent, Republic Steel Corp., Cleveland, and Hugh S. Fegely, control engineer, Westinghouse Electric Corp., Buffalo.

2:00 p. m.—MECHANICAL SESSION—Ball Room

Chairmen: J. A. Bell, chief engineer, Bethlehem Steel Co., Bethlehem, Pa.
F. E. Robinson, assistant division engineer, American Steel & Wire Division, United States Steel Co., Cleveland.

"Chromium Plating as Used in the Iron and Steel Mills," by John B. Allen and Jerome D. Tulloch, Chromium Corp. of America, Chicago.

"Material Maintenance Program," by J. B. Whitlock, general maintenance engineer, and J. E. Anderson, research engineer, Armco Steel Corp., Middletown, O.

"New Developments in Submerged Melt Welding for Steel Mill Maintenance," by D. E. Knight, development engineer, Linde Air Products Co., Newark, N. J.

2:00 p. m.—COMBUSTION SESSION—Club Room B

Chairmen: E. T. W. Bailey, chief combustion engineer, Steel Co. of Canada Ltd., Hamilton, Ont.
R. A. Lambert, superintendent, steam and combustion, Jones & Laughlin Steel Corp., Pittsburgh.

"A New High Temperature Alloy," by M. N. Ornitz, works manager, and R. H. English, chief metallurgist, National Alloy Steel Division of Blaw-Knox Co., Blawnox, Pa.

"Experiences with Oxygen Control in Open Hearth Flue Gases," by F. P. Hubbell, superintendent fuel department, Homestead Works, United States Steel Co., Munhall, Pa.

"Application of Automatic Combustion Controls to a New Open-Hearth Shop," by F. S. Swaney, combustion engineer, Pittsburgh Works, Jones & Laughlin Steel Corp., Pittsburgh.

10:00 p. m.—President's Dance—Euclid Ball Room, Hotel Statler

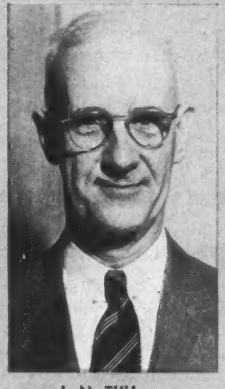
WEDNESDAY, OCTOBER 1

9:00 a. m.—ELECTRICAL SESSION—Ball Room

Chairmen: Eric L. Anderson, superintendent electrical department, Bethlehem Steel Co., Johnstown, Pa.
F. H. Wickline, electrical engineer, National Tube Division, United States Steel Co., Pittsburgh.

"The Magnetic Amplifier and its Application in the Steel Industry," by W. E. Miller, manager, steel mill section, industrial engineering department, General Electric Co., Schenectady, N. Y.

"The Meaning of Commutator Film," by Leon D. Cook, supervisor substations, Commonwealth Edison Co., Chicago.



I. N. TULL
1952 President, AISE

J. L. YOUNG
1952 1st Vice President, AISE

"Synchronous Motor Torque Requirements for Steel Mill Applications," by Dr. William A. Thomas, electrical engineering manager, Electric Products Co., Cleveland.

9:00 a. m.—COMBUSTION SESSION—Club Room B

Chairmen: A. F. Kritscher, development engineer, National Tube Division, United States Steel Co., Pittsburgh.
G. J. Gockstetter, district combustion engineer, Republic Steel Corp., Chicago.

"Wide Range Metering of Oxygen in Steel Plants," by M. S. Gare, manager, Ring Balance Division, Hagan Corp., Pittsburgh.

"Continuous Process Produces High Strength Oil Well Casing by Quenching and Tempering Carbon Steel," by F. H. Bremmer, chief combustion engineer, and F. J. Zehnder, project engineer, Spang-Chalfant, Division of National Supply Co., Ambridge, Pa.

"Castable Refractories in the Steel Mill," by J. D. McCullough, chief engineer, Refractories Division, Babcock & Wilcox Co., New York.

2:00 p. m.—BLAST FURNACE SESSION—Ball Room

Chairmen: C. G. Hogberg, assistant to chairman, Blast Furnace Committee, United States Steel Co. of Delaware, Pittsburgh.
W. H. Collison, assistant general superintendent, Furnace Division, Great Lakes Steel Corp., Ecorse, Detroit.

"Injection of Natural Gas and Oxygen into the Blast Furnace," by Dr. Julien O. Raick, Ingenieur Civil des Mines A. I. Lg. Brussels, Belgium, and James E. Brassert, vice president, H. A. Brassert & Co. Inc., New York.

"Exploration and Development of a New Iron Mine," by R. P. Bremner, assistant to vice president charge of operations, Youngstown Sheet & Tube Co., Youngstown.

"Material Handling Layout of Blast Furnace and Coke Plant at Fairless Works," by Carleton Lord, materials handling engineer, United States Steel Co., Pittsburgh.

2:00 p. m.—LUBRICATION SESSION—Club Room B

Chairmen: Robert A. Kraus, assistant maintenance superintendent, Republic Steel Corp., Chicago.
N. I. Whiteley, lubrication engineer, American Steel & Wire Division, United States Steel Co., Cleveland.

"Lubricants for Drawing Metals," by Allen A. Brown, Reilly-Whiteman-Walton Co., Conshohocken, Pa.

"The Functioning of a Lubrication Organization in Heavy Rolling Mills," by Robert R. Taylor, division engineer, maintenance and lubrication, United States Steel Co., Gary, Ind.

"Replacements for Palm Oil in Cold Rolling Steel," by Robert C. Williams, director of research, Ironsides Co., Columbus, O.

6:00 p. m.—OLD TIMERS DINNER—Euclid Ball Room—Hotel Statler

THURSDAY, OCTOBER 2

9:00 a. m.—OPERATING PRACTICE SESSION—Ball Room

Chairmen: Emil Kern, vice president in charge of engineering, Allegheny Ludlum Steel Corp., Brackenridge, Pa.
F. M. Darner, chief engineer, manufacturing division, Republic Steel Corp., Cleveland.

"Processing Properties and Applications for Cold Finished Steel Bars," by J. F. Byers, metallurgist bar products, Jones & Laughlin Steel Corp., Pittsburgh.

"The Extrusion of Steel, Equipment, Operation and Production," by Jacques Sejournet, general manager, Comptoir Industriel D'Etirage Et Profilage De Metaux, Paris, France.

"A Machine to Cold Reduce 18-Inch Tubing," by Graham B. Brown, administrative assistant, Tube Reducing Corp., Wallington, N. J.

9:00 a. m.—LUBRICATION SESSION—Club Room B

Chairmen: D. E. Whitehead, general lubrication engineer, Crucible Steel Co. of America, Pittsburgh.
Charles A. Bailey, lubrication engineer, National Tube Division, United States Steel Co., Pittsburgh.

"Oil Mist Lubrication for Industrial Machinery," by E. Ralph Harris, Alemite Division, Stewart-Warner Corp., Chicago.

"The Effect of the Lubricant on Gear Performance," by V. N. Borsoff, research engineer, and S. S. Sorem, research engineer, Shell Development Co., Emeryville, Calif.

"Considerations in the Design of Plain Bearings," by A. E. Cichelli, lubrication engineer, Bethlehem Steel Co., Bethlehem, Pa.

7:00 p. m.—FORMAL DINNER AND DANCE—Grand Ball Room—Hotel Statler

FRIDAY, OCTOBER 3

9:00 a. m.—OPERATING PRACTICE SESSION—Ball Room

Chairmen: T. M. Fairchild, assistant to the general manager, Bethlehem Steel Co., Johnstown, Pa.
Paul E. Thomas, assistant to general superintendent, United States Steel Co., Gary, Ind.

"Applications of the Radiation Gaging Method in the Steel Industry," by George B. Foster, technical director, Industrial Nucleonics Corp., Columbus, O.

"The Recovery of Tin from Scrap Tinplate," by A. J. Krombholz, assistant head, chemical development and research division, Weirton Steel Co., Weirton, W. Va.

"Dynamic Painting in Steel Plants," by Joseph K. Seyler, superintendent, Hazelwood cold finishing department, Jones & Laughlin Steel Corp., Pittsburgh.

9:00 a. m.—ROLLING MILL SESSION—Club Room B

Chairmen: D. W. Lloyd, general superintendent, Youngstown Sheet & Tube Co., Youngstown.
George L. Pimlott, assistant superintendent of bar mills, Republic Steel Corp., Cleveland.

"Mechanized Hot Scarfing," by J. H. Zimmerman, manager, development and process service, Linde Air Products Co., New York.

"Aluminum Foil and Its Uses," by W. B. Hackett, assistant to president in charge engineering, Lewis Foundry and Machine Division, Blaw-Knox Co., Groveton, Pa.

"High Speed Mills and Their Application to Ferrous and Nonferrous Rolling," by George Perrault Jr., E. W. Bliss Co., Salem, O.

2:00 p. m.—ELECTRICAL SESSION—Ball Room

Chairmen: K. L. Johannsen, assistant division superintendent, maintenance and utilities, United States Steel Co., Fairless Works, Morrisville, Pa.
L. V. Black, superintendent, electrical department, Bethlehem Steel Co., Bethlehem, Pa.

"The Adjustable Voltage Ore Bridge Drive at Otis Works," by Clark B. Risler, industry engineer, Westinghouse Electric Corp., East Pittsburgh, Pa., and E. C. Juhnke, electrical engineer, Otis works, Jones & Laughlin Steel Corp., Cleveland.

"Modern Lighting Systems for Steel Mills," by R. F. VandenBoom, illuminating engineer, General Electric Co., Cleveland, Ohio, and D. L. Beeman, manager, industrial power engineering, industrial engineering department, General Electric Co., Schenectady, N. Y.

"Protection of Underground Cable Sheaths," by T. W. Alexander Jr., transmission engineer, Bell Telephone Co. of Pennsylvania, Pittsburgh.

2:00 p. m.—COMBUSTION SESSION—Club Room B

Chairmen: F. Bruce Bevelheimer, power and fuel engineer, steel division, Ford Motor Co., Dearborn, Mich.
George H. Krapf, chairman, fuel and power committees, United States Steel Co., Pittsburgh.

"Safe Handling of Fuels, Hazardous Gases and Liquids," by F. R. Pullen, fuel engineer, Bethlehem Steel Co., Johnstown, Pa.

"The Characteristics of Fuel Oils Used in the Steel Industry," by John P. Critchlow, chief fuels and lubricants engineer, rolling mill section, Gulf Oil Corp., Pittsburgh.

"Pumping and Burning of Tar and Pitch," by Warren A. Pond, manager of industrial viscous fluid department, Fluid Systems Inc., New Haven, Conn.

10-TON, 29′-1½″ SPAN O. H. FLOOR CHARGER

BUILT BY MORGAN Engineering

Illustrated is a Morgan 10-Ton High Visibility Floor Charger with hydraulic hoist and box clamp.

By using a hydraulic hoist, the large hoist motor with its reduction unit usually used, is eliminated, thus providing maximum visibility for the operator.

A hydraulically operated head at end of peel clamps the box head so the box will not "flop around" when turned.

Four (4) take-up reels for handling the motor leads are provided, thus eliminating twenty (20) conductor angles on the bridge.

Trolley is carried on four (4) top running wheels with two (2) kick-up wheels. The two rear upper and kick-up wheels are spring suspended for absorbing shocks when picking up loaded boxes.

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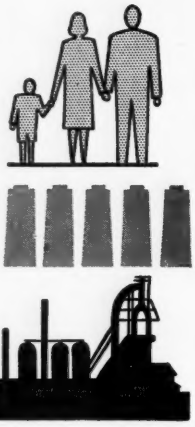
GROWING UP TOGETHER?



	CAPACITY JAN. 1 (Net tons)	STEEL PRODUCTION (Net tons)	PER CENT OF CAPACITY	U.S. POPULATION (Millions)
1953	120,000,000*	.....	...	†160.6
1952	108,587,670*	88,000,000	81.0	†158.5
1951	104,229,650	105,199,848	100.9	155.6
1950	99,982,650	96,836,075	97.9	151.1
1949	96,120,930	77,978,176	81.1	149.1
1948	94,233,460	88,640,470	94.1	146.6
1947	91,241,250	84,894,071	93.0	144.0
1946	91,890,560	66,602,724	72.5	141.2
1945	95,505,280	79,701,648	83.5	139.6
1944	93,854,420	89,641,600	95.5	138.1
1943	90,589,190	88,836,512	98.1	136.5
1942	88,886,550	86,031,931	96.8	134.7
1941	85,158,150	82,839,259	97.3	133.2
1940	81,619,496	66,982,686	82.1	132.0
1939	81,828,958	52,798,714	64.5	130.9
1938	80,185,638	31,751,990	39.6	129.8
1937	78,148,374	56,636,945	72.5	128.8
1936	78,164,300	53,499,999	68.4	128.1
1935	78,451,930	38,183,705	48.7	127.3
1934	78,128,416	29,181,924	37.4	126.4
1933	78,614,403	26,020,229	33.1	125.6
1932	78,780,913	15,322,901	19.5	124.8
1931	77,257,803	29,058,961	37.6	124.0
1930	72,985,406	45,583,421	62.5	123.1
1929	71,438,516	63,205,490	88.5	121.8
1928	68,840,912	57,729,481	83.9	120.5
1927	67,236,117	50,327,407	74.9	119.0
1926	64,750,035	54,089,014	83.5	117.4
1925	68,473,222	50,840,747	74.2	115.8
1924	66,563,515	42,483,772	63.8	114.1
1923	65,682,014	50,336,940	76.6	111.9
1922	65,426,682	39,875,277	60.9	110.1
1921	64,262,027	22,157,853	34.5	108.5
1920	62,313,591	47,188,886	75.7	106.5
1919	61,020,669	38,831,779	63.6	105.1
1918	58,846,418	49,797,923	84.6	104.5
1917	55,567,555	50,467,880	90.8	103.4
1916	51,282,314	47,906,522	93.4	102.0
1915	46,249,146	36,009,161	77.9	100.5
1914	44,451,977	26,334,594	59.2	99.1
1913	.....	35,056,979	...	97.2
1912	.....	35,001,459	...	95.3
1911	.....	26,517,238	...	93.9
1910	.....	29,226,309	...	92.4
1909	.....	26,829,624	...	90.5
1908	38,237,343	15,706,037	41.1	88.7
1907	.....	26,166,105	...	87.0
1906	.....	26,205,913	...	85.4
1905	.....	22,426,821	...	83.8
1904	28,213,147	15,523,074	55.0	82.2
1903	.....	16,279,175	...	80.6
1902	.....	16,740,920	...	79.1
1901	24,039,064	15,090,426	62.8	77.6
1900	.....	11,410,928	...	76.1

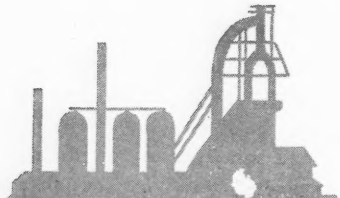
Steel industry figures from American Iron & Steel Institute; population figures from U. S. Bureau of Census.
* Planned.
†Projected.

120 Million Tons of Steel—How Does It

SOMETIME in 1953 a new steelmaking furnace will be brought in to lift American steel capacity to 120 million tons. Then the postwar expansion program, as now projected, will be virtually completed. We will have expanded capacity by one-third.

How will the expanded capacity match the needs of the American economy? Will it be more than can be fully utilized over the remainder of the decade? Will it be too little to meet our civilian and defense demands adequately? Or just right?

To find the answers STEEL went to the leaders of the steel producing industry, talked with commercial research men, queried the outstanding spokesmen for the labor unions and government.



INDUSTRY VIEWS

STEEL men are frankly concerned that they may have over expanded. They believe our new steelmaking capacity puts us in the position of a 12-year-old boy in a 14-year-old's suit. We will grow into it in time but are going to have some slack until we do. They believe it may be 1960 or later before this country will actually need 120 million tons.

Shotgun Expansion—Steel men would have preferred to time their expansion a little more gradually. They rather resent coercion applied by the government to force a quick and huge expansion under the threat: "You do it or we will build the new plants with public money;" the enticement of fast amortization; and the persistent insinuation that failure to expand indicated a lack of patriotism.

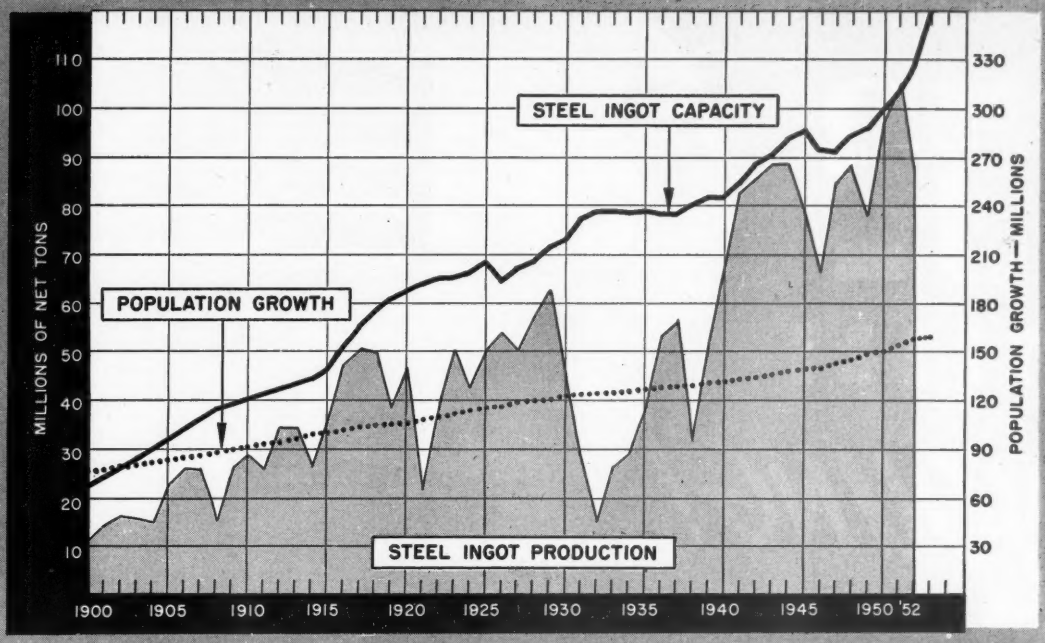
Need New, Growing Outlets—Market research men believe the traditional markets for steel are leveling out. They can see no great expanding market, such as that once supplied by the railroads and later by the automotive and container industries, in the immediate future. Possibly atomic energy will supply such an expanding market in the future, but at present atomic energy requirements are no more than a gleam in the research man's eye.

Commercial research men do not suggest we have reached a static market. But they believe the rate of growth will be more gradual and that it will follow the population growth more closely than in some of the large expansion periods in the past.

The Markets—Here is how steel men look at their markets:

Automobiles—New passenger car registrations are expected to be 50 million by 1960. Indicated passenger car production required will be 4 to 4½ million units annually. Trend toward larger, more expensive cars can be reversed by economic recession.

Containers—Tin cans have pretty well caught up with their potential. No great expansion is expected, but market will continue strong. Steel shipping containers will continue to grow. Steel strapping may grow sharply.



It Match Our Economy?

Railroads—Demand will be largely for replacement. No expansion in trackage is indicated. Dieselization program is almost complete and freight car expansion is leveling out.

Household Appliances — Old line appliance sales will tie in more closely with population trend. Strength will be evident in some new lines such as room air conditioners, deep freezes, dish washers.

Oil and Gas—This is one of the growing markets and should continue to expand for next 15 years.

Shipbuilding—Good only in wartime.

Aircraft—Civilian demand overshadowed by military. Takes substantial quantity of special steels.

Machinery, Industrial Equipment—Strong market expected as management seeks to replace man-hours with machine-hours. Subject to cyclical soft spots.

Electrical Equipment—Demand will continue to expand for decade or more.

Farm Implements—Bloom is off established lines. New items will continue strong.

Construction—More steel in building is the greatest single hope of the steel producers. A greater portion of the construction dollar will go for steel in the future. Farm buildings will take more.

How Big?—Adding up the prospects of these civilian markets, steel men just can't see where 120 million tons of steel a year is going to be used. The abnormal demand for consumer durable goods which followed the war is subsiding. The peak of the industrial expansion may be past.

Listen to the Men Who Know—Here are the opinions of top steel executives on the adequacy of our steel capacity:

C. M. White, president, Republic Steel: "A national steel capacity of 120 million tons anticipates the requirements of an increased population by many years. Such capacity is adequate not only to serve the present needs of the American people but should be adequate for the next decade.

"Even with the sharp increase in population expected over the next ten years and with steel consumption per capita steadily rising, 120 million tons should meet all civilian needs and reasonable defense requirements."

E. G. Grace, chairman, Bethlehem Steel: "As far as one may judge from present circumstances, it seems probable the prospective capacity should be adequate for some time to come.

"The nation and the steel industry, in my opinion, will continue to grow. Steel capacity has been stepped up so rapidly in recent years, however, that any further increases now do not seem called for."

Joseph L. Block, executive vice president, Inland Steel: "In my judgment, when all of the 120 million ton capacity is available, this will represent more steel than our economy can use for both civilian needs and the rearmament program under presently existing conditions."

W. W. Sebald, president, Armco Steel: "One hundred twenty million tons will be more than enough to serve the needs of this country until perhaps the late 1950s. Assuming the military program will continue as now planned, the reasons for this viewpoint are:

"1. For the past several years this country has experienced the greatest expansion of industrial capacity in its history. . . This wave is passing its peak and industrial expansion will decline.

"2. The tremendous demand for consumer dur-

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able goods which was stimulated by wartime shortages along with full employment and high purchasing ability is settling down to a more normal level.

"3. The housing situation appears in the same category as consumer durable goods. Due to the lower birth rate in the depression of the 1930s, family formation for the next few years will be considerably lower than it has been since the war."

Henry J. Kaiser, president, Kaiser Steel: "Because Kaiser Steel production is in the West, I will restrict my comments to the area we serve.

"There has never been enough steel production in the West to satisfy demand. Moreover, steel demand has increased so rapidly that notwithstanding the very substantial expansion in western steel producing facilities, it has been necessary to obtain increasing quantities from other sections. In 1940, the seven western states consumed 2,500,000 tons, but produced only 700,000. It was necessary to ship in 1,800,000 tons.

"Last year, these states produced 3,600,000 tons of finished steel products and consumed 6,000,000 tons. The remaining 2,400,000 tons which had to be shipped in was greater than the amount of outside steel received in 1940.

The Bureau of Census predicts the population of the seven western states will rise from 16,619,000 in 1950 to 21,443,000 in 1960. . . The increasing number of people in the West will mean that a further substantial increase in steelmaking capacity must be achieved in this area."

GOVERNMENT VIEWS

Dr. Louis H. Bean, economist, Office of the Secretary of Agriculture, long has been an outspoken advocate of expansion. Dr. Bean:

"To judge this prospective capacity we need to look at the long term trends in steel capacity, the per capita 'consumption' of steel and the demand beyond 1954.

"The depression of the 1930s checked the long-time growth of the steel industry, with the result that by 1940 steel capacity was probably about 10 million tons below what it would have been had there been no depression. . . The industry was expanded during the World War II period but not up to the level indicated by the long-term trend. . . Since 1950, steel capacity has expanded very rapidly. If it attains the goal of 120 million tons by January, 1950, it will be in line with the trend based on the low points of the capacity record from 1884 to 1934.

"On the basis of this admittedly simple approach, the goal of 120 million tons by the end of 1953 would appear to be almost right. The goal would more nearly square with the long-time record if it were, say, 125 million tons.

"Now let's examine the record of consumption. On a per capita basis we have required a rising quantity of steel. For the prosperity conditions that prevailed in 1906, 1912, 1920 and 1929, per capita consumption, in round figures, amounted to 600 pounds, 700 pounds, 900 pounds and 1100 pounds, respectively, and in line with that trend we consumed 1250 pounds in 1941. . . The per capita figure for 1954 would appear to be 1400 to 1450 pounds. For a population of 163 million persons in 1954 this would mean a peace-time prosperity requirement of nearly 115 million tons.

"In view of these calculations I am inclined to look upon the goal of 120 million tons by the end of 1953 as about in line with the long-time trend, but possibly a bit short."

LABOR VIEWS

Otis Brubaker, research director, United Steelworkers of America speaks for labor: "The Steelworkers union has long favored a substantial expansion of the nation's steel capacity. . .

"The question of whether 120 million tons of capacity is sufficient, or too much, or too little, is not possible of categoric answer. . . If the question relates to the adequacy of capacity for 1953 for immediate civilian and limited defense needs—assuming no war and no expansion of defense needs—we might be inclined to answer a hesitant 'yes.' If the question, however, implies that 120 million tons of capacity is sufficient for both the immediate needs and for the indefinite future or for possibly greatly expanded defense needs, we would certainly answer the question with a categoric 'no'."

Mr. Brubaker cites the following considerations:

1. Population growth alone makes the idea of a static steel capacity "rather absurd."
2. The needs of a full employment economy require a continuing expansion.
3. Demand for larger quantities of steel and steel products is far greater than it ever has been, and will continue to be greater, if the purchasing power is available to would-be consumers. Industry can help insure continuance of high demand by wise price policies.
4. Steel capacity has not been high enough to permit serious price competition in steel.
5. A substantial portion of industry's capacity (20-25 per cent) is inefficient, should not be operated.
6. "It appears foolish to anticipate full-time continuous operation of all steel capacity. There are bound to be interruptions, like the recent production stoppage, as long as industry remains unwilling at periodic intervals to make fair contract settlements with its employees. Thus what might otherwise be called 'excess' capacity is apparently necessary to help provide for such contingencies."
7. Defense needs suggest we need some stand-by capacity.

"The conclusion is inescapable that the projected 120 million tons is not sufficient for the foreseeable and reasonably immediate future."

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The accompanying illustrations show a few of the successful applications of this SKF principle —on roll neck bearings in steel mills, printing cylinder and paper mill roll bearings, on SKF "OK" Shaft Couplings, main and crank pin bearings in air compressors. The principle is also well suited to other equipment such as crushers, construction machinery, etc.

SKF's first patent application on the hydraulic mounting principle was made in 1943.

Since then, more and more equipment designers are taking advantage of this SKF "first." For further details, write for SKF Brochure No. 344.

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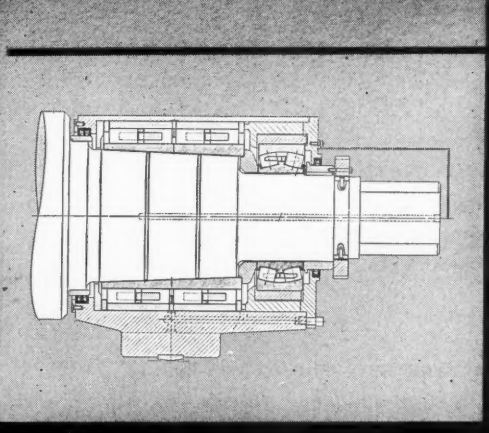
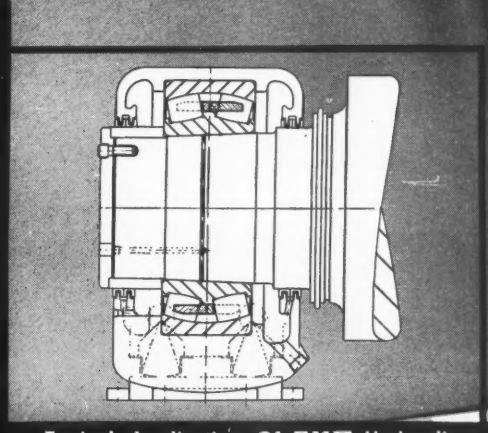
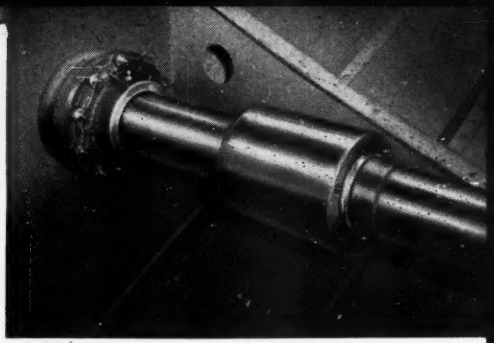


Typical Application Of **SKF** Hydraulic Mounting For Roll Neck Bearing.



Typical Application Of **SKF** Hydraulic Mounting For Printing Cylinder And Paper Machine Roll Bearing.



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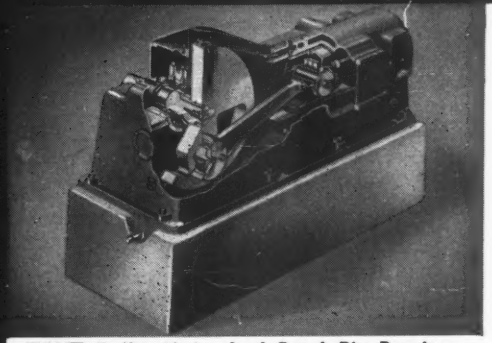

SKF Roller Main And Crank Pin Bearings With Hydraulic Mounting Feature On A Pneumatic Compressor.

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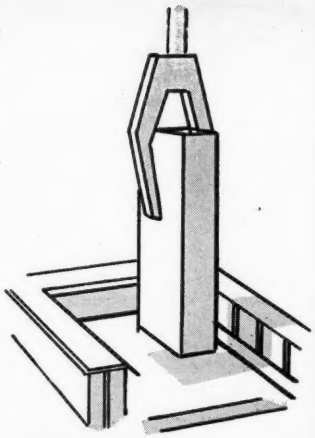

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* DOLOMITE
* COAL
* SAND
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* OTHER BULK MATERIALS

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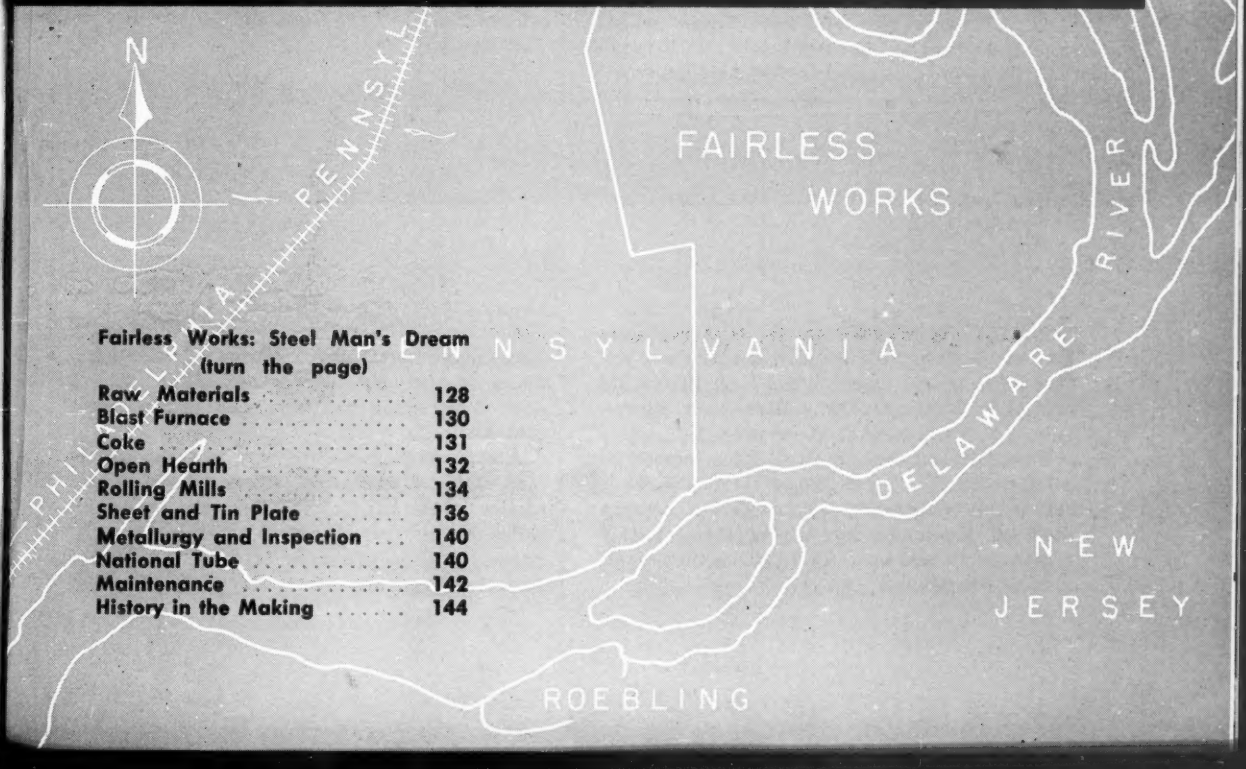
STEEL
September 22, 1952

By IRWIN H. SUCH
Editor
and WALTER J. CAMPBELL
Managing Editor

BENJAMIN F. FAIRLESS

THE FAIRLESS WORKS



Fairless Works: Steel Man's Dream
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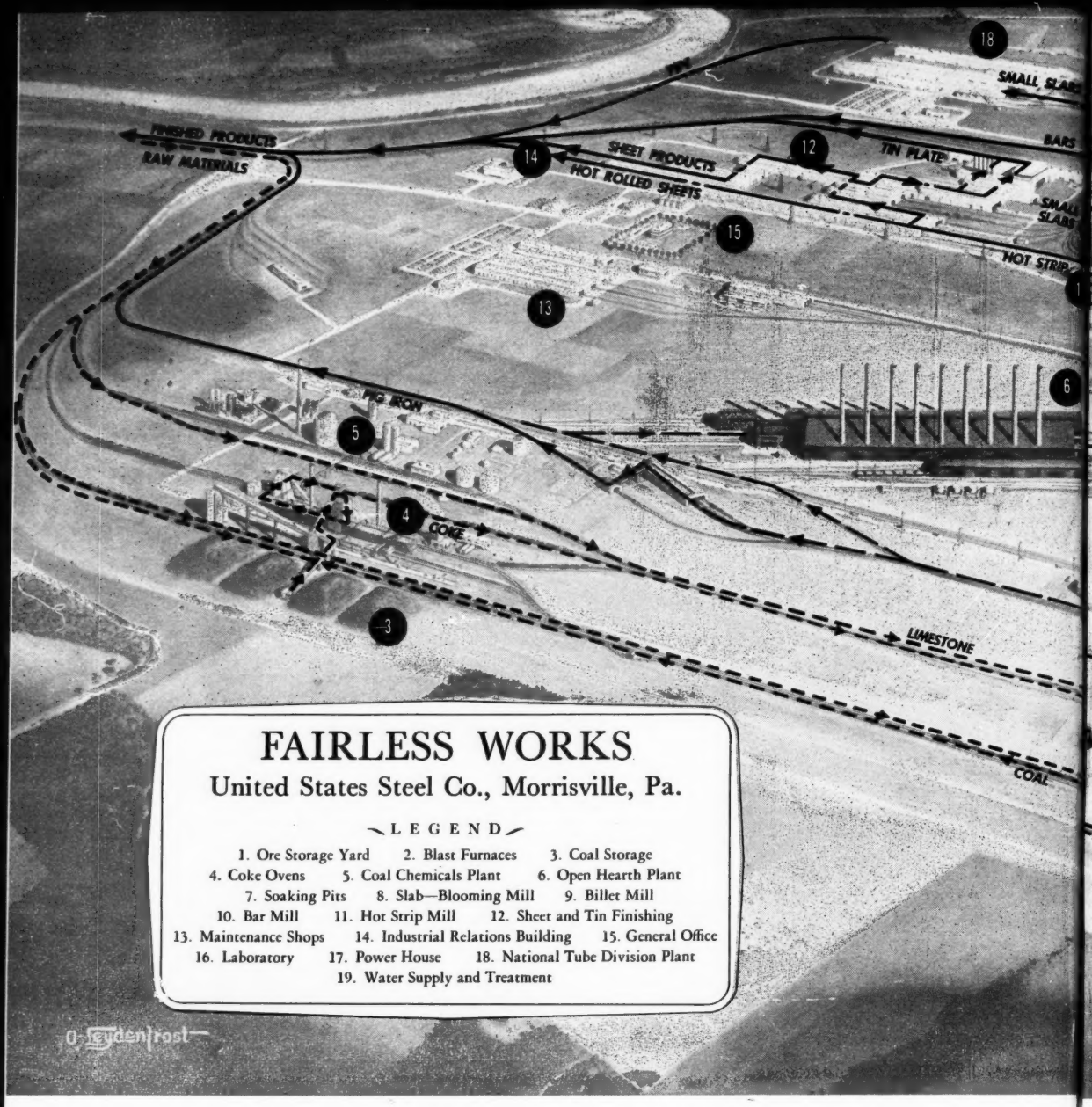


FAIRLESS WORKS

United States Steel Co., Morrisville, Pa.

LEGEND

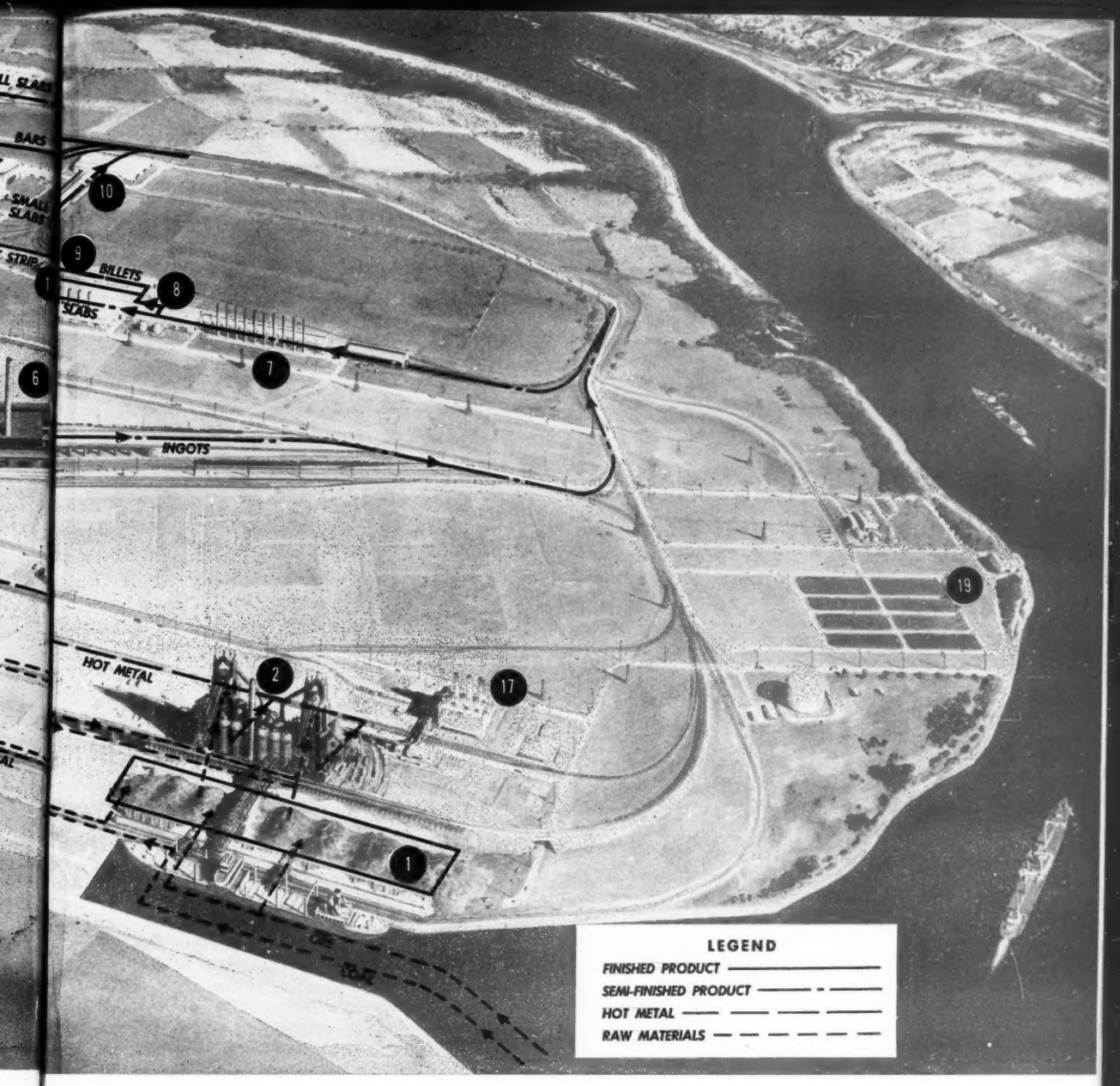
1. Ore Storage Yard 2. Blast Furnaces 3. Coal Storage
4. Coke Ovens 5. Coal Chemicals Plant 6. Open Hearth Plant
7. Soaking Pits 8. Slab—Blooming Mill 9. Billet Mill
10. Bar Mill 11. Hot Strip Mill 12. Sheet and Tin Finishing
13. Maintenance Shops 14. Industrial Relations Building 15. General Office
16. Laboratory 17. Power House 18. National Tube Division Plant
19. Water Supply and Treatment

FAIRLESS WORKS is the steel operating man's dream. That is how the men who are building and soon will run U. S. Steel's big new plant on the Delaware River near Morrisville, Pa., enthuse over their project.

Here the engineers started from scratch to build a completely integrated steel mill. They had plenty of space—3939 acres—to arrange facilities the way they wanted them. Within reason they could have the facilities they wanted to do the job.

Result: A mill that not only incorporates the most modern steel mill equipment available but which is arranged to provide a more efficient flow of materials than is possible in most older plants.

Accent on Space—Site is a tract of former farmland 10 miles in circumference which nestles in the bend of the Delaware about five miles below Trenton, N. J. Visitors are impressed by the distances between the various facilities. From the coke ovens to the blast fur-



naces is a full mile. There is ample room for six more blast furnaces and additional coking facilities to match. Elsewhere on the plant site distances are equally impressive. These may dwindle if the corporation decides to expand the mill.

Now, as the chief of the construction project likes to put it: "The accent is on space."

Capacities—Initially the plant will have 1.8 million net tons of annual ingot capacity from nine 275-ton open hearths. Two blast furnaces will produce 1,134,000 net tons of iron operating with Venezuelan and other foreign and domestic iron ore as available. Two batteries of 87 coke ovens each will turn out 932,000 tons of coke annually.

Finished steel capacities of facilities now building will be 235,000 tons of hot-rolled sheet, 289,000 tons of cold-rolled sheet, 170,000 tons of tin mill product, 285,000 tons of bars and 281,000 tons of steel pipe.

Ultimately the basic capacities could be

THE FAIRLESS WORKS

ALBERT J. BERDIS
. . . general superintendent

"Quality is our edge" says the boss man at Fairless Works. He is proud of the mill's layout and facilities, confident in the men surrounding him, and enthusiastic over the big plant's growth potentials.

trebled or quadrupled if market and other factors justify. Finishing facilities could be expanded into many other steel products. The space is there. At the moment, the corporation is busy on several major construction projects and is silent on future expansion plans.

Big Figures—Statistics on Fairless Works are fabulous. To plan the layout required 9.5 million man-hours of engineering, or the work of one long-lived engineer for 4750 years.

A quarter million tons of steel is being used in its erection.

Connected electrical load is approximately 390,000 Kva.

Area under roof is 125 acres. To erect the facilities required that 8,750,000 cubic yards of earth and fill had to be moved.

Plant transportation moves on 75 miles of railroad and 16 miles of improved roadway. There are 30 miles of sewers.

Requirements—When the plant begins operations it will consume 5.4 million tons of raw materials annually, enough to fill a train 1300 miles long. Enough power will be consumed monthly to supply a city of 450,000. Daily water consumption will be 254,000,000 gallons, which will be drawn from the Delaware River and from wells, treated, used, treated again and returned to the river more pure than when it was taken out of that river.

$75,000 Per Job—When the project was started, unofficial cost estimates ran to $400,000,000. This figure was used by some corporation executives in describing the project. Since then construction costs have advanced sharply. While precise figures are not available, the project will represent an investment in plant and equipment of about $75,000 for each employee.

Go East, Steel Men!—The Delaware River Valley once was an important center of the iron industry. It supplied much of the material for George Washington's Continental Army. Around 1800, the industry started a westward march that has continued to the present. Iron ore and coal are bulky commodities and the newer mills were located where the raw materials could be assembled at most favorable costs—largely on the Pittsburgh-Chicago axis.

Metalworking industries accompanied the westward march—both to keep within reasonable distance of their steel supply and their markets.

Now the Fairless Works and large expansions by other producers are slowing, if not reversing, the trend. There are strong indications the metalworking industries again will follow the steel mills.

For more than a quarter of a century there have been recurring rumors in the steel industry that U. S. Steel was considering the building

of a major mill in the East. Sometimes there were reports that it had taken options on a site, but until two years ago there appeared to be little foundation for the reports, although it was frankly admitted by principal officers of U. S. Steel that an eastern mill was being considered.

While the corporation was studying its plans for a seaboard mill, the Communists invaded South Korea and this country launched a huge military preparedness program.

U. S. Steel at first had considered only installing finishing facilities in the East. At a second stage it planned to put in basic capacity—one blast furnace and five open hearths. But the start of the Korean fracas and a re-evaluation of the needs caused the sights to be lifted a second time—to two blast furnaces and nine open hearths.

Markets and Materials—The decision to select the bend in the Delaware river near Morrisville, Pa., as the site for an eastern mill stemmed from a combination of factors. The most important are markets, raw materials and cheap water transportation. Aside from the urgent requirements of national defense which influenced the timing of the building of this mill, it was a simple matter of geography to determine that 21 million people lived within 100 miles of the new mill site. In that area are such metalworking centers as New York, Newark, Trenton, Philadelphia, Baltimore, Harrisburg and Wilkes-Barre. Within 300 miles of Morrisville live one-third of the people of the United States.

When America can turn once more to the provision of peacetime needs alone, the products of the Fairless Works will be in great demand throughout this wide area.

Market studies indicate the Trenton-Philadelphia-Washington area provides an outlet for 7 million tons of finished steel. Metropolitan New York and northern New Jersey are good for 2.5 million tons. New England takes more than 2 million tons annually. Other consuming areas within the orbit of Fairless Works swell the total to estimates ranging as high as 20 million and possibly 30 million tons.

A substantial portion of the finished steel used in this rich market now comes from mills located in Western Pennsylvania, Ohio and even Chicago to supplement the output of Eastern producers.

Freight Big Factor—All the midwestern mills are located at uncomfortable freight distances from the seaboard market. Freight charges on steel shipments naturally are No. 1 consideration for steel buyers, who now must pay those charges which once were absorbed by the mills.

Freight rates have doubled since the end of World War II and transportation charges thus have become an even more commanding factor.

Eye Export Market—The export market in normal years may take as much as 10 per cent of this country's total steel production. Freight charges being what they are, the export business naturally must go largely to mills near tidewater. Inland mills are at a distinct disadvantage in competing for a share of the foreign market.

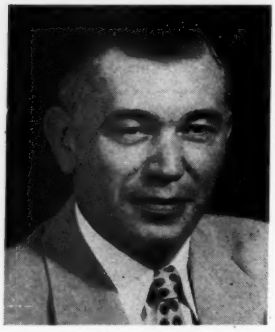
Ore from S. A.—Availability of iron ore was a second major factor in establishing a mill on the Atlantic seaboard. U. S. Steel in common with all other producers long has been concerned with depletion of the rich, easily accessible ores of the Upper Lake ranges. Several years ago the corporation started development of Cerro Bolivar in Venezuela, estimated to contain 500 million tons of rich iron ore. Shipments in quantity will start in 1954.

Initially, rail shipments of domestic ores will be used and a considerable quantity already has been stockpiled at the plant.

River Is the Road—Eventually coal, limestone, fuel oil, manganese and other materials may be received by water.

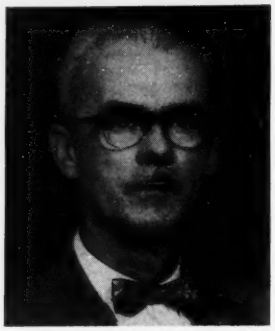
Effective use of the water route to the Fairless Works hinges on deepening the Delaware

HENRY E. WARREN JR.
. . . assistant general superintendent. Formerly with U. S. Steel's Homestead Works



T. J. KOENIG
. . . superintendent, rolling division

L. R. WALKER
. . . chief metallurgist and inspector



E. R. MILLER
. . . superintendent, blast furnaces and coke

A. C. BLEDSOE
. . . superintendent, sheet an finishing

River channel to accommodate ocean-going vessels, a proposal now before U. S. Army engineers. The present authorized channel for 27½ miles below Trenton is only 25 feet and is too shallow for vessels built for deep water transportation. Until the channel is deepened a substantial portion of the materials destined for Fairless Works will be brought in from Philadelphia by rail or by lighter.

Steel Magnet—Building the Fairless Works on the Delaware is setting off a chain reaction in industrial expansion in the area. Within a few years, the new expansion in the area promises to exceed $4 billion.

Some of the new plants are being established to supply goods for the new steel works. General Refractories, for example, is setting up a $3 million plant next door to the works. Part of the product undoubtedly will be used to line and reline the Fairless furnaces and other steelmaking equipment.

More plants are being drawn to the area by the promise of high quality steel at low transportation costs. Automotive, stamping, oil, chemical, electrical equipment and diversified metalworking companies either have made decisions to move into the area or are studying proposals to establish plants and branches there.

Ben Fairless, U. S. Steel president and chairman for whom the plant is named, says: "What we are actually building over there in Bucks County is something more than a steel mill—it is a steel magnet which can be expected to attract scores of new industries and to bring thousands of new jobs, new homes, new products and new neighbors."

New Homes—Although the Fairless Works will employ only 6000 people and many of these will be recruited from residents of the area, a home building boom is well underway in the immediate area of the mill.

Fairless Hills is one of the outstanding residential developments. It will comprise upwards of 4000 Gunnison homes, in a well planned community. No two homes in the immediate area are alike and the entire development reflects careful planning. It includes shopping centers and other community facilities. Danherst Corp. which is building the village, is completing houses at a rate of 16 a day and a total of 1100 have been completed.

Another new community on an even larger scale is Levittown, built by Levitt & Sons. Levittown will have 16,000 homes and is designed for 70,000 population.

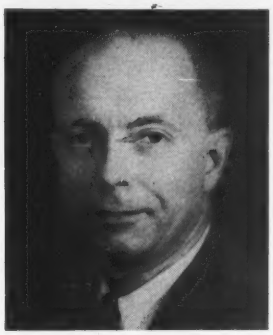
In both developments is room for expansion over present goals. The sizes of the development indicate the outlook of the builders for the growth of the community.

Farming Out—While the ultimate scope of the industrial development in the Delaware valley can be only conjecture, building the Fairless Works already has been felt throughout more than half the states and has affected the earnings of more than 3 million people.

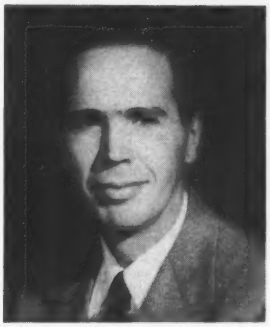
U. S. Steel is employing 200 prime contractors on the job. Each prime contractor has an average of ten subcontractors and each of the 2000 subcontractors in turn is using one subsubcon-

H. A. PARKER
. superintendent, open hearths

F. B. LAFFERTY
. . . superintendent, industrial relations



K. L. JOHANNSEN
. . . superintendent, maintenance and utilities



J. F. BROWNLEE
. . . superintendent, production planning

tractor. Thus the corporation in hiring 200 contractors obtained 4000 more.

Small Business—Sixty per cent of the prime contractors and 75 per cent of the first tier of subcontractors are in the small business category in that they employ fewer than 500 people.

Altogether they employ 2,900,000 persons, operate in 27 states. They buy materials and supplies from 130,000 other business firms scattered throughout the country on whose size and employment no figures are available.

Case History—E. W. Bliss Co., Salem, O., is one of the prime contractors on the job. Bliss has 47 subcontractors and at least 6 subsubcontractors. Data were gathered on 48 of the Bliss sub and subsubcontractors. These show 9 companies have fewer than 50 employees; 8 have between 51 and 100; 16 have between 101 and 500; 6 have between 501 and 1500; 8 have 1501 to 5000 and only one has more than 5000. Total employment represented by the Bliss prime contracts is 49,799. The subcontractors draw on well over 1000 suppliers.

Getting Ready—Although full operation of the Fairless works still is several months away, a team of supervisory personnel already is at work on the site. Nearly 300 strong, these men now are helping to build the mill, will be ready to operate it when completed.

About 85 per cent of the top supervisors now on the job come from other corporation plants. Vandergrift, Homestead, Irwin, Gary, South Works, Edgar Thomson, Youngstown, Clairton, Ohio, Duquesne, Columbia, T. C. & I., Donora, Wood, National Tube and Pittsburgh General Office contributed men to man the new mill.

It was not necessary to draft the men to go to Morrisville. This is an opportunity seldom offered to operating men—to help build and then operate the only big integrated steel mill to be erected in this country in so short a space of time.

Visitors to the mill are impressed by the enthusiasm of the supervisory team for their project. Modesty is tossed aside while they tell what they are going to do at the new works.

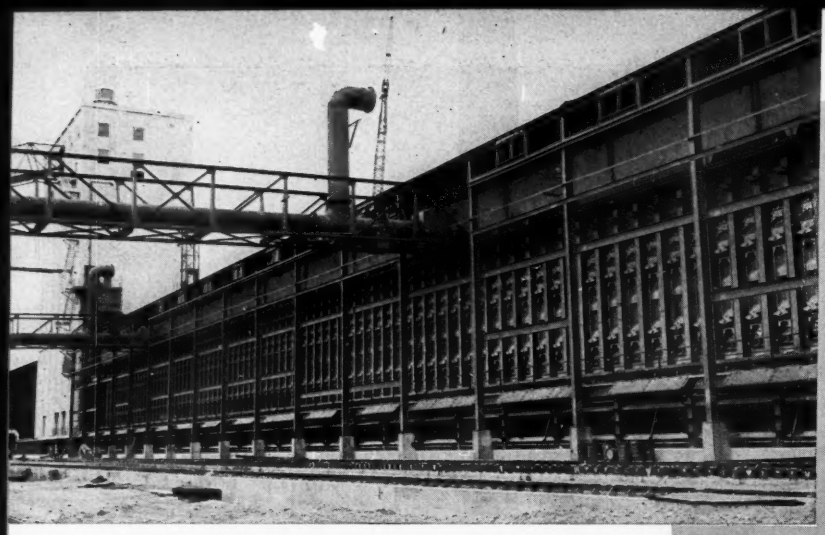
Impatient—The only discontent expressed by the men who will operate the mill is over delays in construction.

Construction has been slowed by more than a half dozen strikes among the unions working for the various contractors and, of course, by the general steel strike. Craft unions, sensing the industrial development to follow Fairless in the Delaware River area, are eager to establish precedents that will provide work for their members and have staged several jurisdictional strikes.

The steel strike is estimated to have delayed completion by two months.

Starting Time — While earlier time tables would have had the works making and rolling steel by this time, executives have become a little cautious on announcing starting dates. They prefer to give time by quarters.

Barring further serious strikes, initial operations at Fairless will start in the fourth quarter of 1952.



Two batteries of 87 ovens each will produce 932,000 tons of coke annually. Photo shows pusher side of No. 1 battery. At extreme left is temporary shed covering No. 2 battery with coal bunker in the center

THE FAIRLESS WORKS

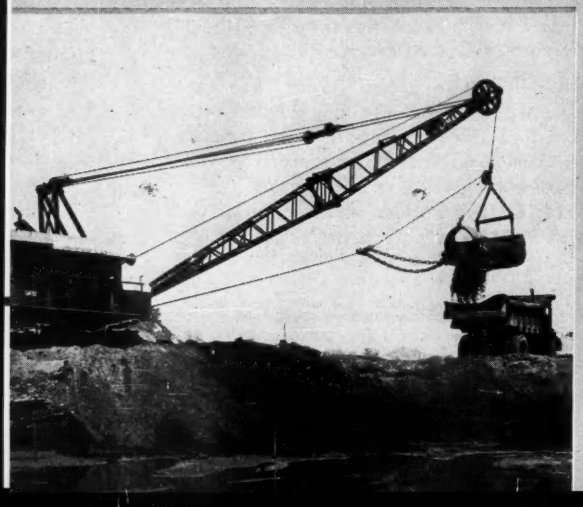
RAW MATERIALS

IN PLANNING raw materials handling at Fairless, U. S. Steel's engineering department designed a layout for a two-blast operation at the outset with room for a possible expansion to eight furnaces whenever defense or peacetime needs and the overall company program indicated the desirability of further growth. All this was to be accomplished without laying out money for equipment which might not be used for several years.

Even with a two-furnace operation, the plant will begin chewing up enough raw materials late this year to fill a train extending 1300 miles from Fairless Station, Pa. to Key West, Fla. This means 1,938,000 tons of iron ore and 228,000 tons each of limestone and dolomite annually for the blast furnaces; 256,000 tons of charge ore, 104,000 tons of stone for the open hearths and 1,138,000 tons of coking coal. Scrap shipped directly to the open hearths will total about 621,000 tons a year.

Rail or Water—The problem also involved handling incoming raw materials by rail, by water or by both simultaneously. It has been worked out with these basic units:

Dirt removers carry away mountains of earth from the site of the dock slip where ocean-going vessels will tie up alongside the blast furnaces to deliver ore from Venezuela and other foreign sources. Engineers used an earthen dike to hold back the waters of



1. A boat slip 350 feet wide by 1000 feet long with the north end left open for extension to 3200 feet if and when more furnaces are added. Initially, it will be 27 feet deep but is designed for deepening to 40 feet to handle big 40,000-ton carriers of the future for bringing in foreign ore. Right now, the Greater Philadelphia-South Jersey Council is plugging for deepening of the upper Delaware channel from 25 to 40 feet.

2. Two 15-ton clam shell unloaders of the trolley type running parallel to and for the full length of the slip on common runways. Three more unloaders will be added when the slip is lengthened. Buckets will have a hoisting speed of 250 fpm.

3. Ore storage yard with capacity of 750,000 tons and a concrete-floored ore trough holding 60,000 tons. The latter will be used for temporary storage of ore as it is unloaded from ships or cars. It will be serviced by the unloaders, the ore bridge and a traveling stacker conveyor.

4. An ore bridge of the Hoover-Mason type with 283-foot span and cantilevers at the furnace and trough ends 74 feet 6 inches and 69 feet long, respectively. Tower at the furnace end supports an electrically heated storage hopper of 66 tons capacity which is loaded by the ore bridge bucket. The hopper discharges into 120-ton, electrically operated, double side dump transfer cars used for stocking the blast furnace bins.

5. Space is provided at the plant if, at a later date, the building of an ore screening station and a sintering plant are believed necessary.

Sintering Plant Later—In the conveyor layout for moving the fines from the ore screening station to a storage bin, provision has been made for future installation of a sintering plant. Flue dust and sludge from the blast furnace precipitators and gas washers would be treated in the same plant. Coarser ore goes to storage on conveyors.

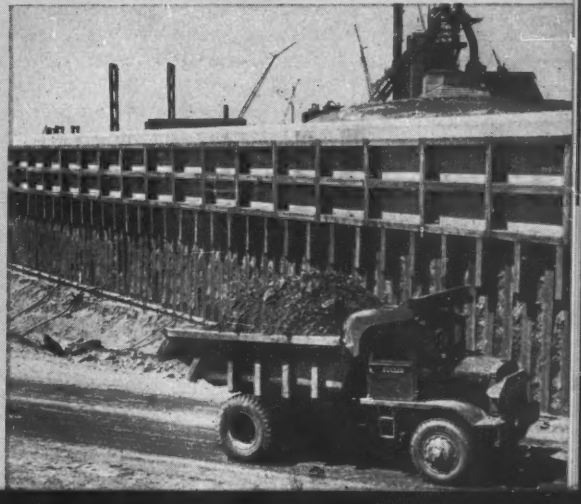
6. A car dumper of the rotary type designed to handle 30 hopper bottom or gondola cars of 90 net ton capacity per hour. It will handle foreign and domestic ores brought in by rail, coal from central Pennsylvania and West Virginia mines, and limestone and dolomite from nearby sources.

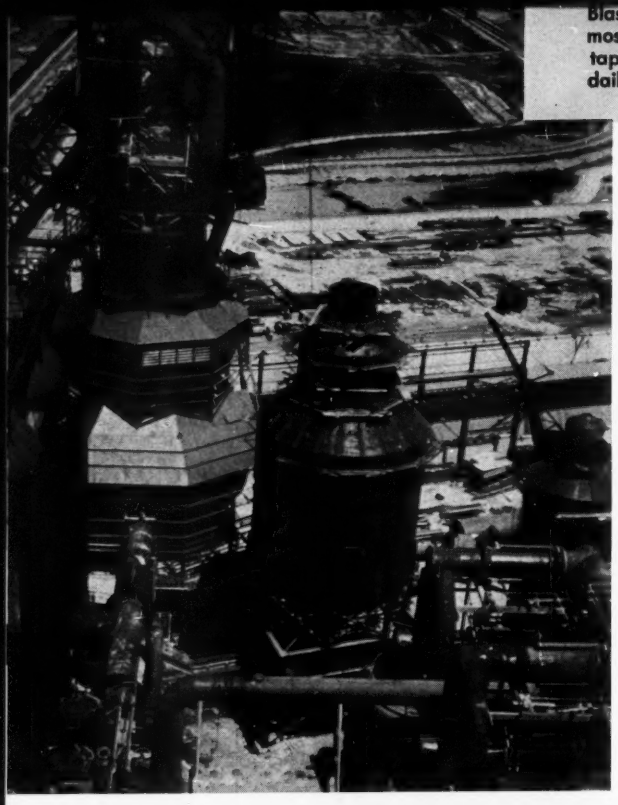
A 120-ton diesel locomotive with couplers operated from the cab will spot four cars at a time on an inclined section of track ahead of the dumper. Gravity does the rest.

7. Coal processing equipment includes a Bradford breaker, a pulverizer and four mixing bins. Weigh conveyors take the coal from the bins, mixed according to desired ratio of low and high volatile coals, to a pulverizer. The coal is pulverized to minus ⅛-inch and is conveyed to the 3700-ton oven coal bin from which it is distributed to the ovens by a 3-hopper, 16-ton charging car.

One 1750-foot conveyor belt 48 inches wide will carry coal from the dumper to the coke works at 550 fpm or 1400 tons per hour. Another 48-inch belt 3600 feet long will carry ore and limestone to the blast furnaces. It will run parallel to the boat slip and ore storage yard for their entire lengths and will be located under the feeders of the rear hoppers of the boat unloaders. Thus it can be used for handling incoming ore for reshipment to other U. S. Steel plants. These are but two of more than a dozen conveyors in a system designed eventually to handle up to 3000 tons of ore per hour and to aid in unloading a 40,000 gross ton ship in ten hours.

the Delaware River to make possible a dry earth excavation project, rather than a dredging job. Center photos show progress in the excavation with the dock wall, where carriers will tie up, in the background. Photo at right shows stack nearing completion





Blast furnaces at Fairless are among the largest and most modern in the United States. Each stack will tap as much as 350 tons of hot metal five times daily. Annual production of the two will be close to 1,200,000 tons

THE FAIRLESS WORKS

BLAST FURNACE

THE TWO blast furnaces at Fairless are big 28-footers pretty much like several others built by the company in the last few years. There are, of course, a number of refinements in design and also what is regarded as being a vast improvement in the handling of hot metal for the open-hearth shop.

A double strand Heyl Patterson pig casting machine with a capacity of 1500 tons a day will be used only when it is necessary to stock iron.

Each furnace is expected to turn out 567,000 tons of iron annually. Output will run better than 1500 tons a day.

Dimensions—Here are some of the vital statistics:

Bosh diameter, 31 feet, 3 inches.

Stockline diameter, 21 feet, 6 inches.

Large bell diameter, 15 feet, 10 inches; small bell, 8 feet.

Height of hearth, 12 feet, 5 inches.

Height of bosh, 11 feet 5 inches.

Height of vertical section above bosh, 7 feet 5 inches.

Height of inwall, 56 feet 3 inches.

Height of throat, 7 feet 3 5/16 inches.

Height above throat, 13 feet 8 11/16 inches.

Total height from tap-hole to top of ring casting 105 feet.

Working height, 81 feet 3 13/16 inches.

Working volume, 47,345 cubic feet from tuyeres to 6 feet below closed large bell.

Number of tuyeres, 20.

Ore and limestone are delivered to the blast furnace bins by hopper cars or from storage in the yard by the ore bridge and transfer cars. Coke will be delivered from the coke plant to the blast furnace coke bins by a 48-inch conveyor belt.

Two central bins at each furnace are used for nut coke and discharge directly in the weigh hopper without screening and then into the 300-cubic-foot skip cars of which there are two per furnace.

Six other bins at each furnace feed coke to screens to take out material under ¾-inches. Coke breeze goes to a storage hopper and furnace coke into a weigh hopper.

Thirty-three bins holding 2200 tons of ore, 550 tons of limestone and 700 tons of miscellaneous materials such as scale, scrap and open hearth slag discharge into the Atlas scale cars serving each furnace. Cars are of 40 ton capacity, double bottom, travel at 500 fpm and discharge into the skip buckets through electrically operated gates.

For furnace linings, hearth and bosh quality refractory brick are used for first five rows of bottom block or 7½ feet, then super-duty Cone 23 for the next five rows of bottom block. Bosh also will be lined with High Duty brick and the stack with Cone 18 crude clay, with Cone 23 for 10 feet below the stock line armor.

Three Stoves Each—Hot blast for each furnace is provided by three stoves 28 feet in diameter and 125 feet high. Cold blast for the stoves is supplied by individual, Ingersoll-Rand four-stage turbo-blowers with capacity of 110,000 cfm against delivery pressure of 35 psi.

Blast furnace gas, collected from each furnace by four uptakes, is delivered by a downcomer pipe 11 feet in diameter to a dust catcher equipped with a Bailey double screw type pug mill. The gas then passes to a McKee static spray tower washer with two sets of sprays.

Each furnace has two Research electric pre-

cipitators for further cleaning the gas down to 0.010 grains per cubic foot so that it may be used for firing boilers in the power house and in the blast furnace stoves with a minimum of incrustation on tubes and checker work.

Mixer Ladles Hold Hot Metal—Five times each 24 hours a couple of 200-ton Treadwell mixer type ladles that look like torpedoes and act like thermos bottles will be shunted in the blast furnace ladle house to receive a cast of hot iron and rush it to the waiting open hearths. The 200-ton ladles are the largest in use in the industry. Six now are on loan to Gary.

Fifteen of these huge bottles have been purchased to provide Fairless with the most advanced and efficient method for handling iron. The ladles will be used as mixer capacity in the open hearth where the iron will be poured directly into the furnaces, thus eliminating the intermediate step of holding it in conventional mixers.

Slag Disposal Speeded—Slag will be run off directly into dry pits 100 by 240 feet, first being partially cooled by water jets at the furnace. After solidifying, the slag will be removed by power shovels and loaded into cars or trucks for further disposal. Fairless thus will avoid the tedious chore of hauling slag to a dump four or five miles away as is so often necessary where quarters are cramped.

COKE

COAL will be coked for the blast furnaces in sealed, narrow, externally heated ovens of the regenerative type. Continuously welded steel flushing plates in the bus flues at the base of the ovens lick a gas-leakage problem which has long plagued coke oven operators. This type of structure also makes it possible to divide the ovens into four units and add to their over-all strength.

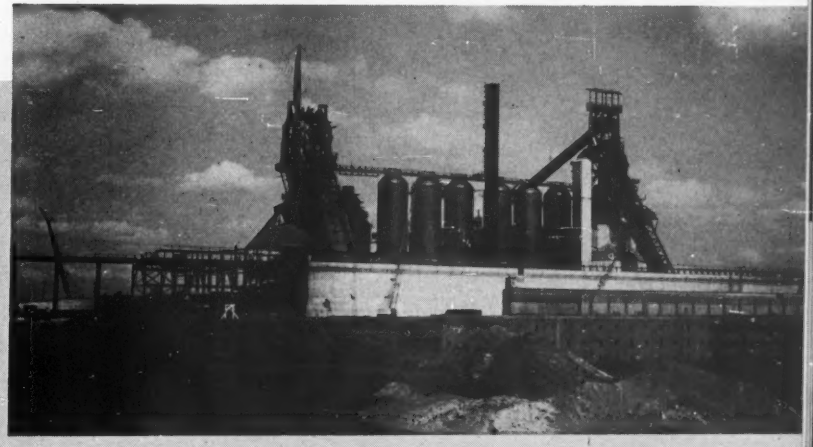
The two Wilputte batteries of 87 ovens each will use 540 Btu coke oven gas for underfiring and will provide for possible use of blast furnace gas.

Two pusher machines push the coke into a 40-foot quenching car which is moved by electric locomotive to the quenching station. After quenching, the coke drops onto a 260-foot coke wharf, fed onto a belt conveyor to the screening station. There it is graded into breeze coke under ¾-inch and furnace coke over ¾-inch. Furnace grade material heads for the blast furnace on a 36-inch, 5700 foot long conveyor.

Each oven is 40 feet 7⅝ inches long, 12 feet high and 18 inches wide with 3½ inch taper.

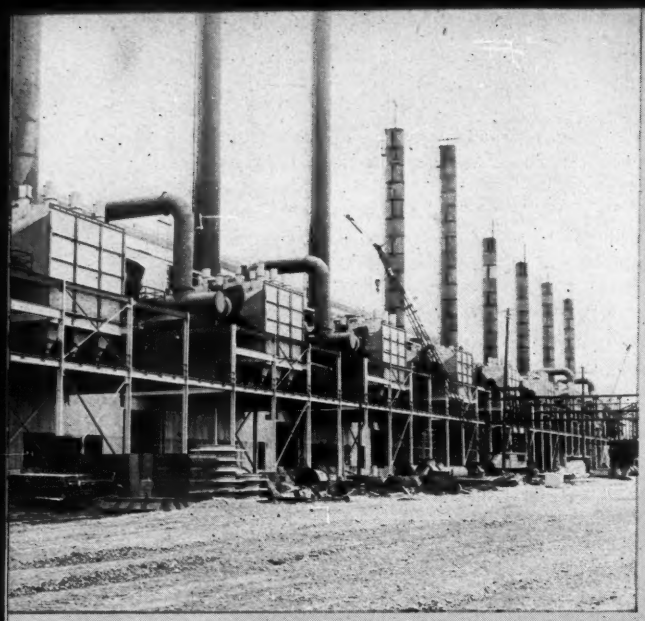
Big Appetite—The ovens will require 1,358,000 tons of coal annually. Coal charged per day will total 3770 tons, 20 per cent low volatile to 80 per cent high volatile, although other mixtures may be selected. Yield is expected to run 2550 tons of furnace grade and 210 tons of breeze per day. Underfiring of the ovens is expected to require more than 18.6 million cubic feet of gas per day but there will be an excess of 22 million for other plant use.

The coal chemical plant will provide for recovery of ammonium sulphate, crude tar, naphthalene, sodium phenolate and crude light oil and for future refining of tar and benzol. Two light oil scrubbers each 12 feet in diameter and 116 feet high are fitted with fine, misty sprays rather than the usual wood or steel grids. Another refinement is in sodium phenolate recovery equipment. Light oil is used for scrubbing the ammonia liquor to remove the sodium phenolate. A caustic treatment then is used to separate the sodium phenolate from the light oil. The process replaces the vapor-phase system.



Six stoves, 125 feet tall and 28 feet in diameter, will supply the hot blast for the Fairless blast furnaces. The furnaces are equipped with electrostatic precipitators to clean the gas

OPEN HEARTH



Electrostatic precipitators are installed on all the open hearths to guard against air pollution. Twin units on each furnace permit one to be shut down for maintenance at any time. This is one of U. S. Steel's gestures toward good community relations

FEW would contest the statement that the Fairless open-hearth shop represents the last word in operating practice, efficiency and convenience. The men who planned and those who will operate the shop say no attempt was made to set up a radically different steelmaking practice but that the best practices developed and most modern equipment available are being used.

In addition to refinements, however, there is one big "difference". It is the addition of electrostatic precipitators which represent the investment of $2.5 million in community protection. The precipitators have little other function than to remove more than 95 per cent of the iron oxide and dust which might otherwise settle down over the surrounding countryside.

Plenty of Room—As in other areas of the plant, the accent is on space. The nine open hearths are housed in a main furnace building 1287 feet long and 88 feet wide. The adjacent lean-to is the same length by 85 feet wide, adequate for four tracks and easing the usual congestion in handling materials at furnace side. There also is a truck ramp.

The pouring pit building is 1404 feet long by 79 feet wide and has three pouring platforms, one 351 feet long and two 410 feet long. Three 450-ton cranes will handle the fourteen 300-ton steel ladles. Pouring aisles in the pit will be concreted in the interest of better housekeeping. Cleanup will be accomplished with bulldozers equipped with bucket fronts.

Scrap Handling — Stock yard building has almost identically the same dimensions as furnace building. Four parallel tracks run through the building. Two outer tracks receive scrap from a nearby receiving yard. Three 15-ton cranes with 65-inch magnets load scrap into the 50-cubic-foot charging boxes, arranged four to a car on the center tracks. Two 36-inch high platforms running nearly the length of the building between the charging car tracks facilitate manual leveling of scrap in the boxes.

A preparation yard is equipped to burn or shear scrap too large for charging. Light scrap is baled by two 500-ton presses which produce 1500 lb bales.

Ore and limestone is received directly into storage bins adjoining the stockyard building and on the same level as the charging floor. This permits use of the open-hearth ramp to elevate the cars to the top of the bins. Twenty-four bins holding three days' supply drop the material directly into the charging boxes which are handled by four Wellman charging machines, after being placed in front of furnaces on charging box car track.

Ferroalloys for ladle additions are received on a spur track on the furnace side of the charging track, manually loaded on a portable conveyor and dropped into a crusher car. As it is crushed, the material falls into one of five bins. As alloys are required, they are chuted into drop bottom buckets and delivered to the tapping platforms by ladle crane. Ferroalloys for furnace additions are stored between columns on the charging floor.

Dolomite is discharged from hopper bottom cars at charging floor level into storage bins located inside the lean-to at the ramp end. Con-

veyors and a skip hoist elevate it to a bin above the charging floor from which it can be dropped into a dolomite throwing machine.

Mixer Ladles Bring Hot Metal—The big 200-ton mixer type ladles arrive from the blast furnaces at the reladling station located in the north end of the open-hearth charging floor and are spotted over four Streeter-Amet electronic scales. As molten iron is needed for charging, the ladles are tilted by remote control to pour the metal directly into the open-hearth transfer ladles in a pit between the tracks. The control booth is elevated so the operator can observe each movement as he weighs the iron, positions the ladle transfer cars and pours the iron.

A 200-ton crane on the charging floor runway hoists the iron ladle 45 feet from the pit to the charging floor transfer cars. Two transfer cars, pushed by an electric locomotive, can haul 270 tons of hot metal per trip. The furnaces are charged by four 15-ton charging machines.

The nine, stationary type, basic open-hearth furnaces are rated at 275 tons each or 1.8 million tons annually. Length of bath inside the brickwork is 61 feet and width 19 feet. Depth of bath at tap hole is 34 inches. Overall furnace length, inside the iron work, is 94 feet; width is 26 feet 9 inches.

Designed for Front Flushing—The furnaces were designed for front flushing. An elevated track running between the regenerator chambers under each furnace carries a cinder pot car to a receiving position below the center charging door. Sill plate of the center door is designed to permit tapping of slag into the car. Slag also can be removed in the usual manner through the slag spout on the back side of the furnace.

Two separate fuel systems make it possible to burn either Bunker C oil or tar, plus any desired combination of the two in the artillery type burners. A third pipe in the burners provides for oxygen enrichment of the flame. Provision also is made for the introduction of oxygen into the bath through the backwall. Liquid oxygen is delivered by truck to the shop's storage tanks.

A complete Hagan installation of automatic controls and instruments of the automatic type is provided for close control of furnace operations and conditions. For both the furnace and checker work, standard refractories are being used, including silica brick for furnace roofs.

Good Housekeeping—Further in the interests of good housekeeping, forced air ducts in the furnace cellars have been placed below floor level and the area is kept clean with street-type sweepers.

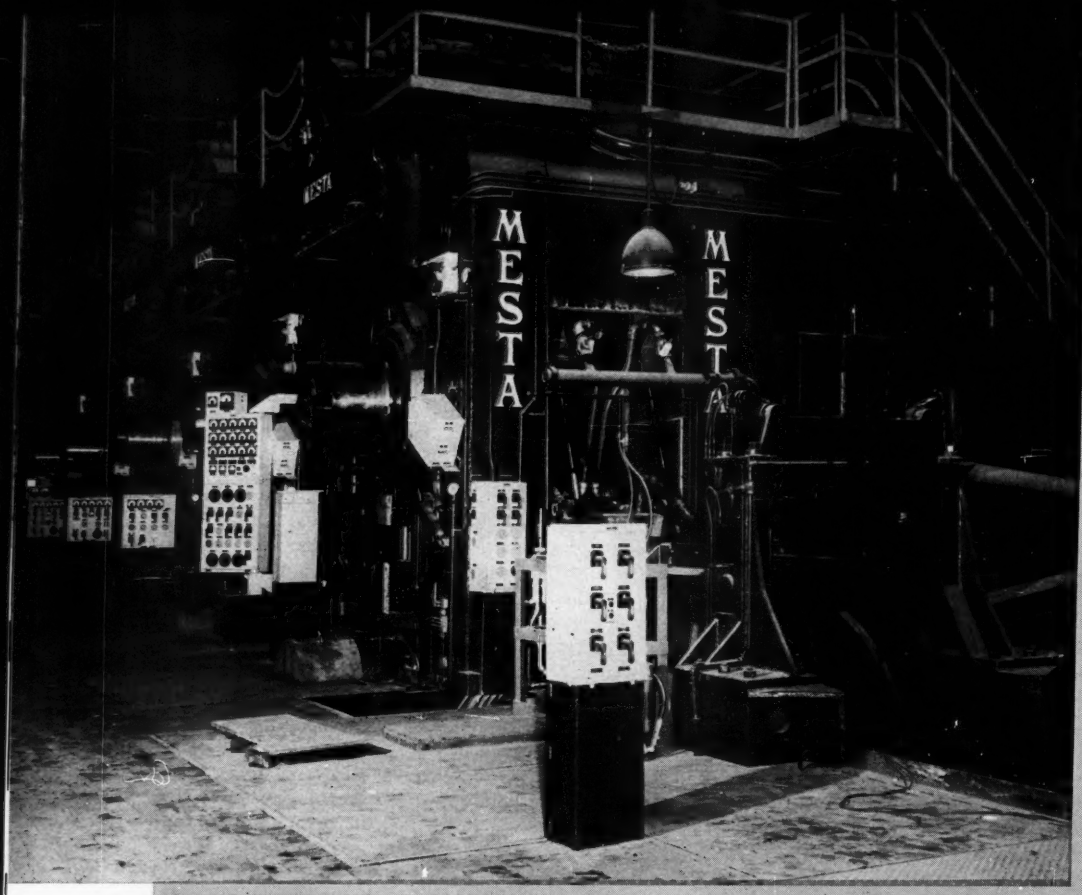
And, of course, the open-hearth supervisory folks like to talk about the precipitators installed for the benefit of all the housekeepers in the entire Trenton-Morrisville area.

Gas from each furnace passes through a waste heat boiler and thence to a pair of Koppers Elex precipitators and finally to the open hearth stack. Each pair of precipitators occupy a space 81 feet 6 inches long by 38 feet wide and 38 feet high, and are installed in a line parallel to the furnaces outside of the building.

With twin precipitators for each furnace, one unit can be removed from service at any time for maintenance purposes. Hoppers at the bottom of the units collect the dry dust, which is removed by vacuum from the hoppers in automatic sequence and deposited into a storage bin. The dust is then agglomerated and loaded into cars for disposal. Packaged power units supply the precipitators with direct current at 65,000 volts.

Ingot sizes will range from 32 to 78 inches wide, 22 to 33 inches thick, and 75 to 94 inches long depending upon the product to be rolled. Maximum weight will be 32,270 pounds. The mold yard building, 1580 by 90 feet will have a 468 foot mold conditioning platform and 720 linear feet of hot top platform. Ingot buggies, 260 in number, are 21 feet 6 inches coupler to coupler and have a capacity of 250 tons.

Workmen check a templet in one of the open hearth furnaces. This device will be replaced by a steel water cooler for operation of a mechanical oxygen jet. Enough brick are used in the construction of each of the nine 275-ton open hearths to build 125 six-room houses



Fastest in the world is the 5-stand cold-reduction mill at Fairless. It is built to run at 7000 feet per minute, or 80 miles an hour. Actual operating speed will be somewhat less. Fifth stand is powered by six 1000-horsepower motors, three to each drive

THE FAIRLESS WORKS

ROLLING MILLS

PICK yourself a strategic spot in the south end of the ingot stripper building at Fairless Works. Look north through the building and across the 165 feet of intervening space into the soaking pit building and on through the slabbing mill and strip mill building for a total of two thirds of a mile.

Then walk out to the east side of the stripper building, again look north toward the blooming mill-billet mill building lying parallel to the strip mill. Then look to the right for the bar mill building running east and west and at a right angle.

If you can perform this neat trick of observation, you can see one of the most efficient and high powered big tonnage mills for rolling hot mill products in the world.

Equipment—It has these five basic units:

1. A 45 by 90-inch Mesta universal slabbing mill for making slabs 24 to 72 inches wide, 4 to 8 inches thick and 7½ to 20 feet long; blooms 14 to 16 inches wide, 18 to 22 inches thick and 25 feet long. Capacity is 3 million net tons per year.

2. A Mesta 80-inch hot strip mill for making coils 18 to 72 inches wide and 0.050 to 0.25-inches thick for further conversion into cold-rolled sheets, black plate and hot-dipped and electrolytic tin plate. Ingots can be rolled into coils without reheating. Capacity is 3,200,000 net tons per year.

3. A 40 by 96-inch 2-high Continental reversing blooming mill for making 9 by 9 inch blooms for further rolling into bars and skelp mill

slabs 11 to 18¾ inches by 7 inches thick for conversion into skelp and subsequently pipe, in the National Tube Division's plant nearby. Capacity is 3 million net tons per year.

4. A United Engineering & Foundry billet mill with annual capacity of 3 million net tons. One 6-stand 30-inch pinion diameter billet mill will make skelp slabs 8 to 16 inches wide 2½ to 4 inches thick and 40 feet long, rounds 5½ to 6½ inches in diameter; and billets 4½ by 4½ inches and over.

A 4-stand 21-inch pinion diameter billet mill can make slabs 2½ by 8 inches, rounds 3 inches in diameter and 2½ by 2½, 3 by 3 and 4 by 4 inch billets.

5. An 18-stand, 10-inch continuous Morgan bar mill for making rounds, hexagons, square etc. from ⅜ to 2 inches, inclusive; angles from 1 to 2½ inches; channels from ¾ to 2 inches, flats from ¾ to 5 inches. Capacity is 500,000 net tons.

Save Retained Heat—Fairless engineers figured there was little point in wasting retained heat in the steel ingots as poured. So, they are brought over to the stripper building from the open hearth half a heat at a time and quickly charged into the soaking pits at a saving of 25 per cent in reheating cost. Having the stripper building close to the pits rather than a half a mile away, of course, accounts for most of the saving. Two Alliance cranes in the 288 by 86-foot building are big enough to handle any size ingot contemplated in the future.

After stripping, the ingots are left on the buggies and quickly hauled by locomotive into the pit building for transfer into the pits by Alliance telescopic cranes. The 20 pits are arranged in pairs, are of Loftus design with Amsler-Morton recuperators. Capacity is 150 tons or up to 16 ingots per pit.

The pits are serviced by two Cleveland gantry type cranes capable of lifting one or two covers simultaneously. Fuel oil, coke oven or coke oven and natural gas may be burned. Furnace atmosphere is closely controlled to reduce time required for cinder cleaning and bottom making.

Fanless Ventilation—The pit building, 840 by 113 feet, has a new fanless ventilating system which draws air from the bottom of the building and up through ventilators at the top —thereby eliminating the usual louver system.

When ingots reach rolling temperature they are delivered on either of a pair of ingot buggies on separate tracks at 1000 fpm to the 45 inch slabbing and blooming mill. It is the first of its type to have fixed vertical roll drives, driven through universal vertical spindles. This feature eliminates the necessity for sliding the drives transversely with the vertical rolls as is the usual practice.

Rolls Changed Rapidly—It will be possible to make roll changes in less than an hour when switching from slabs to blooms or vice versa.

Most big slabbing mills have drives in the 8000-10,000 hp range but this one has 12,000. Each roll will be driven by a 6000 hp Westinghouse motor with two armatures. The 37 by 90 vertical rolls will be driven by a single 4000 hp motor.

After leaving the slabbing mill, the slabs will be edge scarfed when necessary and then passed through a shear for cropping and cutting to length. Blooms will be transferred to the 40-inch reversing mill while slabs will proceed straight ahead to be rolled directly into coils or reheated, if necessary.

Fewer Passes—With a more rugged slabbing mill structure and more powerful drives, greater reduction can be accomplished with fewer passes, perhaps 15 in a given instance in place of the usual 21.

Reheating at the 80-inch strip mill will be done by means of a series of charging tables. Cold slabs will be delivered from slab storage or the slab conditioning yard to the charging table into one end of the Rust reheating furnaces and hot slabs will be discharged from the opposite ends onto the mill delivery table.

The four continuous, triple fired, zone controlled furnaces will heat slabs for rolling at the rate of 135 tons per hour each. Coke oven gas, natural gas or fuel oil may be burned. An overhead recuperator system, not used before on strip mill furnaces, eliminates underground flue work. Hearths are 22 x 90 feet and accommodate slabs up to 20 feet long and nine inches thick.

Overall Size Range of Products

Nine open hearth furnaces will furnish an annual capacity of 1.8 million tons of steel which will be allocated to the following steel products to be produced at Fairless Works:

Hot-Rolled Sheets
Annual Capacity, 235,000 tons
18 gage and heavier
24" to 72" width

Cold-Rolled Sheets
Annual Capacity, 289,000 tons
10 to 28 gage
72" maximum width

Bar Products
Annual Capacity, 285,000 tons
Rounds, squares, hexagons ⅜" to 2"
Flats ⅞" to 5½" wide, 13/34 to 1" thick
Angles 1" to 2½" inclusive
Channels 1" to 2" inclusive
T's 1" to 1½"
Coil material, coiled 32" ID-48" OD

Tin Mill Products
Annual Capacity, 170,000 tons

Tube Mill will receive 314,200 tons of narrow slabs and two continuous butt weld pipe mills will produce 281,000 tons of ½" to 4" pipe annually.

61,500 Horsepower — A terrific amount of power also can be packed into the 80-inch hot strip mill, in fact, what is believed to be a record total of 61,500 hp on the main drives, energized by rectifiers rather than the usual motor-generator sets.

First reduction on the 80-inch hot strip mill is made by a set of 36-inch diameter edging rolls driven by 2500 hp motors and capable of reducing any slab width a maximum of 3 inches.

Next in line is a 39½ by 80-inch scale breaker with 2000 hp, followed by a 40 and 54 by 130-inch broadside mill with a 3500 hp drive. Four universal roughing stands, each driven by 6000 hp motors provide reducing capacity for large slabs. Following the roughers the slab will be cropped by a rotary shear, followed by a scale breaker and descaling sprays.

2320 Feet Per Minute—Six final finishing stands deliver the strip at a maximum speed of 2320 fpm and 3200 tons per turn on the runout line to three rotating mandrel down-coilers. Top speeds for other U. S. Steel wide mills are 2100-2200 fpm. The scale breaker has a 500 hp motor, first five finishing stands 5000 hp motors and the final stand 4000 hp. Allis-Chalmers built the electrical equipment for the roughing train drives, Westinghouse that for the finishing train.

Coils off the strip mill will weigh 550 pounds per inch of width and have maximum diameter of 60 inches.

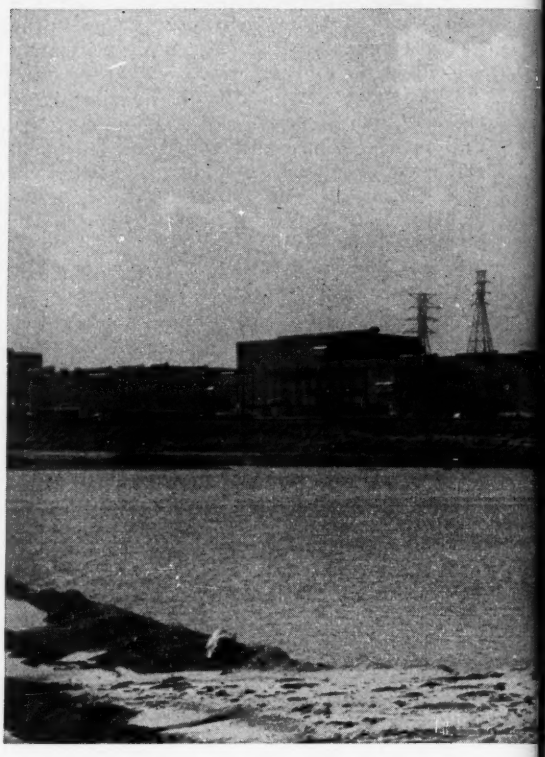
In addition to slabs for the strip mill, the slabbing mill will produce blooms for further reduction on the 40-inch bloming mill. This mill also can roll small ingots but usual practice will be to break down large ingots on the slabbing mill. This mill is driven by an 8000 hp Westinghouse twin drive. Blooms will be surface scarfed all four sides, by a Linde mechanical flame scarfer.

The 6-stand billet line has rolls arranged alternately vertically and horizontally, each stand being driven by a 1750 hp Allis-Chalmers motor. Next four stands will have 1250 hp drives. The line has capacity of 3 million net tons a year.

Shears to Close Tolerance—Lysaght electric billet shear built by Morgan can shear to within 1 inch of desired length. First shear of this type went into service in England.

The Morgan bar mill has 18 stands arranged in line, alternately horizontal and vertical. Delivery speed of 3000 fpm will be the fastest for any mill in use. Bars from the mill run out on a divided cooling bed 420 feet long, or will be coiled in one of four reels.

The Rust billet-heat furnace for this mill was designed to take 40-foot billets, whereas 30 feet has pretty much been the standard length. The furnace capacity is 150 tons per hour.



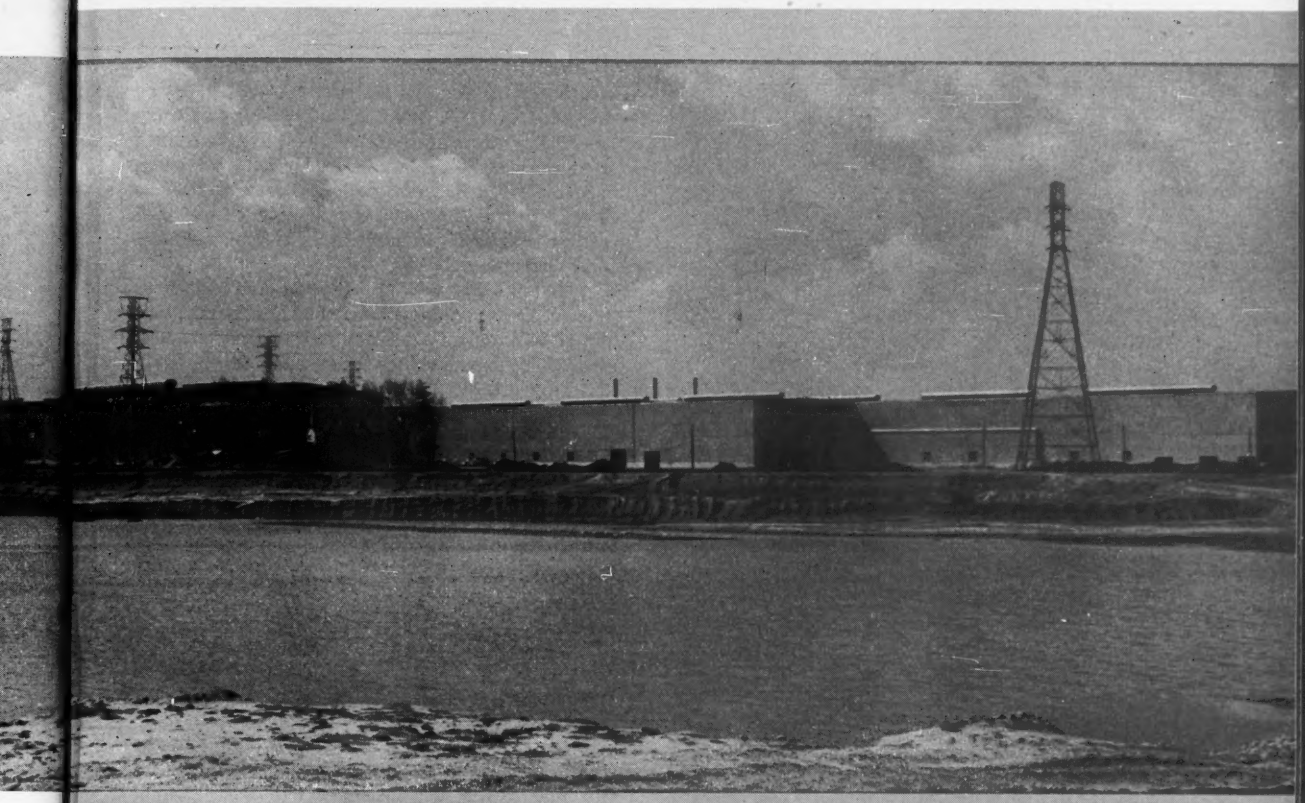
THE FAIRLESS WORKS

SHEET &

AT THE DELIVERY end of the 80-inch hot strip mill at Fairless you see a conveyor line which takes the hot coils northward a thousand feet or so to the sheet and tin plate departments for further processing for the market.

Again, the emphasis is on more power, more production—more efficient production—and easier handling through the more efficient use of the cranes, conveyors, trucks and tractors needed to do the job. More "firsts" in steelmaking include cold reduction of strip for tin plate at a record 7000 fpm and the same plate annealed in 3 minutes instead of 7 days.

The hot strip product arriving from the hot strip mill in coils is permitted to cool for 72 hours, then pickled and processed into the forms and sizes desired by customers.



The sheet and tin mill has 28 acres of floor space under roof and the division occupies a site of 135 acres. Here will be produced the cold-rolled sheet and tin plate. Included is a 125 x 888-foot warehouse with a capacity for 700,000 base boxes of tin plate

& TIN PLATE

Coils for tin plate are cooled for 48 hours, pickled, cold reduced, annealed, temper rolled, sheared, and tin plated either electrolytically or by hot dipping. Coils for cold-rolled sheets are pickled, cold reduced, annealed, temper rolled and sheared.

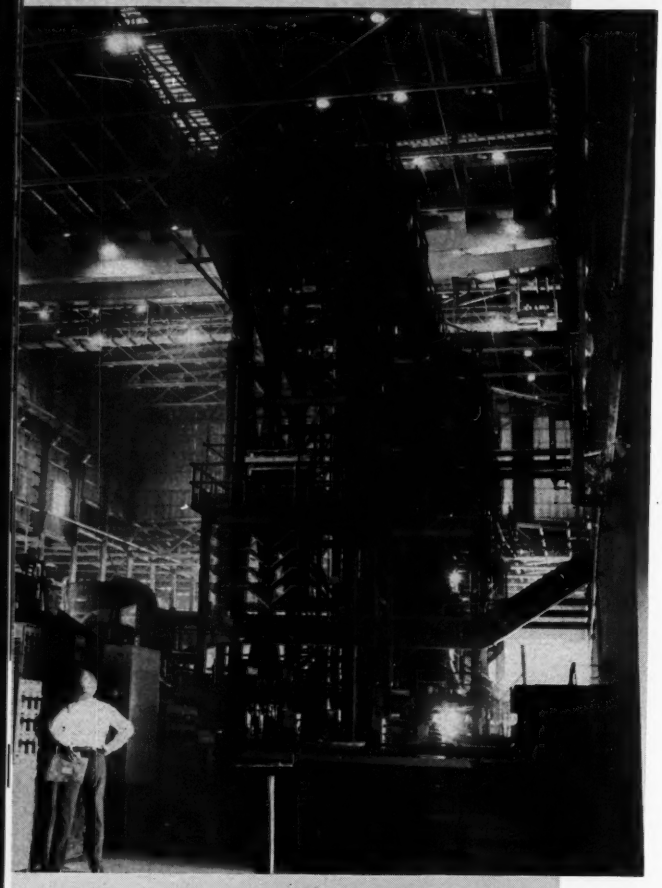
The Wean continuous 600 fpm pickler is designed so that new coils can be started or removed at the discharge end without stopping the line. This is accomplished with a double entry looper pit at the beginning of the line and another looper pit at the exit end. Four pickling tanks 84 feet long and 10 feet wide are welded to form one continuous tank 336 feet in length.

Two-High Mill Breaks Oxide—An innovation in the pickling setup is the introduction of a 32 by 80 inch 2-high mill at the entry end of the line. It serves to elongate the steel 2 to 5 per cent and break up the oxide sufficiently so that the acid will attack the surface more quickly and make it possible to obtain higher quality, more uniform pickling at high speeds. Pickling department has space for two more lines.

After pickling, the coils are carried by conveyor to an adjacent building for storage before reduction into cold-rolled strip on a Mesta 4-stand mill or into strip for tin plate on a Mesta 5-stand cold mill. Coils are handled within the storage area by overhead crane and delivered to either of the mills on pallet-type conveyors.

More than Mile-a-Minute—The 5-stand cold strip mill will roll tin plate stock up to 30 inches wide at a top speed of 7000 fpm, fastest on record. It will use six General Electric drives ranging from 1400 to 6000 hp, each supplied with separate generators. The final stand will be the first driven by a twin-drive unit utilizing six armatures.

The first and second stands have conventional pinion stands wherein the motor drives the bot-



This massive continuous annealing line processes strip steel at a rate of 1000 fpm. The strip undergoes 11 separate processes here to prepare it for stiffening in the temper mill

tom pinion gear and that in turn drives the top pinion gear. Drive on stand one is 1750 hp, on the second stand 3500.

On the third stand, each roll is driven by individual motors with total of 4500 hp and speed-up in ratio of 1 to 1.5. Fourth stand is driven by two banks of twins of same total horsepower and speed-up.

Three Motors per Roll—Fifth stand has three 1000 hp motors driving each roll with speed-up ratio 1 to 2.

The mill, of course, incorporates all the latest refinements, such as fully enclosed couplings, automatic electronic scales for weighing coils at the delivery end, a GE X-ray gage for measuring strip thickness and a Pratt & Whitney Electrolimit gage for cross-checking.

Uses HNX Gas—The line for continuously annealing strip for tin plate is the second to be installed by U. S. Steel, the other being at Gary sheet and tin mill of U. S. Steel. The two lines are essentially the same except that Fairless is using HNX gas atmosphere comprising about 3 to 6 per cent hydrogen and balance nitrogen rather than NX gas which is hydrogen, nitrogen plus carbon monoxide.

The annealer is 385 feet long and measures 96 feet from looping pit bottom to the top point of the looping tower. Speed is 1000 feet per minute which means that a given point on the strip entering the line comes out completely annealed three minutes later. There are 3000 feet of strip in the unit at any one time and it emerges at the rate of 30 tons per hour.

Two uncoiling reels at the entry end of the line plus a looper tower and pit maintain continuity of operation. As the coils enter, they are sheared, seam welded and are on their way through an electrolytic cleaning action. Then come scrubbing, rinsing, flushing under high pressure sprays and drying, a pin hole detector and a scanning device to detect for cracked edges, etc.

Double Looping Tower—Next is a double looping tower which takes 320 feet of strip and the material is ready for annealing. First six passes, up and down, are between gas-fired radiant heating tubes which bring the material up to 1200° F. Then, another 6-pass holding zone, electrically heated, where the strip stays at 1200° F. The third zone, 2-passes, using electric heating elements and tube type cooling to bring the strip down to 900° F. Finally, a 20-pass fast cooling zone, water cooled, for bringing the temperature down to 250° F.

When the strip comes out of the fast cooling zone it is fully deoxidized to a bright finish. High velocity air jets bring temperature down to 25 degrees above room temperature. All this in three minutes and the material is ready for the next step.

The entire line is automatically controlled, including tension, loop position and overspeeding. Major contractors include United Engineering, GE, Hanson Van Winkle Munning and Surface Combustion.

Finishing of black plate, including preparation for plating, will be accomplished on a 4-high, 2-stand Bliss tin temper mill designed for top speed of 3500 fpm. This mill, too, will have direct connected, individual drives for each roll and therefore pinion stands will not be required. The mill can come up to full speed in 12 seconds, stop in 8. Power to drive the mill totals 2400 hp, including 600 hp for the first stand, 800 for the second.

There are two lines, one for side trimming

and recoiling strip for electrolytic tinning; the other a cut-to-length shear line with double pilers for prime sheets scheduled for sale as black plate or for hot dip tinning. Trimmer will operate at 3500 fpm, the shear at 1250 fpm.

Electrolytic Line at 1250 fpm—The Ferrostan electrolytic tinning line built by Wean and operating at 1250 fpm can make 135,000 tons of tin plate annually with coatings ranging from 0.10 to 1 pound. For heavier coatings, five hot dip stacks will be used.

Line assorting, inspection and packaging has been set up at the end of the electrolytic line so that material is ready for transfer to the nearby tin warehouse or for shipment to container makers. Four pilers under control of the inspectors stack the plate in three categories: Primes, waste waste and menders. A separate assorting and reckoning line handles plate from the reject piler and for check-assorting of primes.

The five Aetna-Standard hot-dip lines are scheduled to produce 70,000 tons of tin plate annually with average coating of 1.25 lb of tin per base box. These lines also are designed for line assorting.

The tin warehouse area has capacity for 700,000 base boxes.

Product Flow — Now, let's return to the pickled coil storage area to pick up the product flow for sheets and strip. Coils are delivered by pallet conveyor to the world's fastest 80-inch, 4-stand cold strip mill. Main GE drive motors with total of 21,650 hp, same as for the 5-stand mill, will operate this Mesta mill at 3030 fpm. This is the most power ever applied to a 4-stand mill and is distributed as follows: First stand 3000 hp, second and third 6000, fourth 5250; reel 1400 and auxiliaries 1500. Work rolls are 21 by 80 inches; back-up rolls 56 by 80. The mill will roll coils up to 50,000 lb at maximum annual capacity of 800,000 tons.

Eleven batch-type Swindell-Dressler annealing furnaces with 27 bases are provided to anneal all cold-reduced sheet products together with about 20 per cent of the production of the 5-stand tin mill. The remainder of 80 per cent of the tin plate goes to the continuous annealer. More than 600,000 cfm of cooling air is provided, to shorten the cooling part of the annealing cycle. Annual capacity exceeds 480,000 net tons.

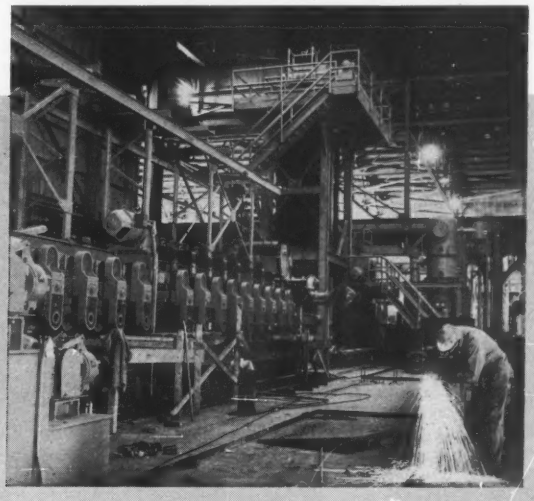
The 80-inch Mesta sheet temper mill is designed to be the fastest wide mill of its type with speed of 3900 fpm. Two Westinghouse main drive motors have 600 hp and the two reel motors 800 hp. Work rolls are 20-inch, back-up rolls 53-inch.

From the sheet temper mill, coils are transferred by conveyor and then by lift truck or crane to shearing lines in the sheet finishing department.

Equipment in this area, 500 by 120 feet, includes an 80-inch shear line, a 56-inch shear line, 80-inch recoiler, stretcher leveler and a 182-inch resquare shear.

Slowdown Conveyors—A unique feature of the 56-inch line is the system for lapping and gathering sheets. Each of three pilers has a set of slowdown conveyors, the sheets being slowed down by magnets under the conveyors.

This 2-stand temper mill receives steel from the continuous annealing line and gives it a controlled stiffness in preparation for electrolytic tinning. Mill operates at 3500 fpm



This electrolytic tinning line has capacity to coat 135,000 tons of sheet annually. Fairless Works will produce 170,000 tons of tin mill products, part of which will be hot-dipped

METALLURGY & INSPECTION

FAIRLESS WORKS must, like other steel plants, produce material to the satisfaction of its customers. The discharge of this part of the task of operating Fairless Works is the responsibility of the Metallurgy and Inspection functions, which have been merged under the guiding hand of L. R. Walker, chief metallurgist and inspector. He comes to Fairless Works from the Edgar Thomson Works, and has also worked at Johnstown, Duquesne and Homestead.

Find Why of Rejection—"With a separate inspection department," reasons Mr. Walker, "the inspector who rejects material is shackled so far as constructive action is concerned, and has no responsibility for finding and removing the cause for the rejection. With the Metallurgy and Inspection functions in one department, we find that each occurrence of defective material will be followed by prompt corrective measures, the objective being a smooth flow of high quality material."

Under Mr. Walker are seven division chiefs: Steel production, sheet mill, tin mill, bar mill, specifications, control and development and chemical. As might be expected, the steel production unit is right in the open-hearth department and sets up practices and checks to see that they are followed.

On the basis that metallurgical testing is nothing more or less than the inspection of the internal part of a product and inspection is on the surface, the two functions are combined in the sheet, tin and bar mills. And, under each chief comes a general supervisor, then a turn supervisor and his relief man.

Customer Gets What He Orders—As orders for steel come in, it will be up to the specifications division to see whether metallurgical specifications can be met and treatments applied. If a specification is accepted, it then is the responsibility of the three finishing units to see that the customer gets what he ordered. As Mr. Walker likes to put it, M & I really is the customer's representative in the plant.

The chief of the control and development division oversees these two activities. The control unit will spot check other units at intervals and see that specifications are being followed. This same group also will keep control charts on all the other units, for example, on amount of sulphur in the steel being made in the open hearth department, rejections in the sheet mill. At any time, the control unit can give operating divisions a rundown on performance.

Check for Longer Wear — Metallurgists attached to the development unit will work with the blast furnace, open-hearth, rolling mill and other departments on plant research work. In development, too, will be a maintenance metallurgist who will work with the maintenance department on figuring out how to get longer wear out of equipment and thus lower costs.

Under the chief chemist there will be two research chemists whose duties will include control of raw materials. For instance, various mixes of coal will be tested in a small coke oven to determine proper blends. Men in this division, of course, will work with the blast furnace and open-hearth departments. They also will play a big part in testing the water that will circulate in the plant's three separate systems.

Seven Laboratories—Most of the chemical work and all of the bar metallurgical work will be done in the main laboratory. In addition, there will be coal and coke, raw material, open-hearth, sheet mill, tin mill and water control laboratories. When fully staffed, Mr. Walker's division will have 190 men.

NATIONAL TUBE

THE FAIRLESS WORKS of the National Tube Division of U. S. Steel will operate as a separate entity. It will, however, obtain slabs for its 15-stand skelp mill from Fairless Works, U. S. Steel Co.

Two continuous butt-weld mills will turn out 281,000 tons of ½ to 4 inch standard pipe annually, part of which will be galvanized. A warehouse will have capacity to stock 30,000 tons.

Fifteen thousand miles of pipe, enough to reach from Morrisville to Korea, can be stored in National Tube Division's new warehouse at the Fairless Works. The structure covers five acres and has a capacity for 30,000 tons. Pipe is stored in spaces between the upright stanchions. Photo shows workmen testing a pipe lift crane

MAINTENANCE SHOPS . . . M

TRANSPORTATION . .

ONE of the big jobs at Fairless is that of the Division Superintendent of Maintenance, which includes maintenance shops, utilities, transportation and general services, and masonry.

Shops to keep all the equipment in a 1.8 million ton integrated steel mill in running shape constitutes a large-scale undertaking in itself. It requires 8½ acres under roof and includes two shop buildings each 96 x 768 feet, plus a third of the same size for storage.

Fix Most Anything—The maintenance shops have well over 200 machine tools, plus cranes and other equipment necessary to make practically all repairs required. Only in a few cases where breakdowns are infrequent will it be necessary to take repair work outside.

The maintenance shops include a machine shop, diesel and car repair, forge, pipe, carpenter, weld, boiler, electric, paint and rigger shops.

In the diesel shop, terminal facilities are provided for eight locomotives and repair pits to repair four locomotives, plus space for car and buggy repair.

Adjacent to the diesel terminal is a truck garage for repairing and servicing all gasoline and diesel powered equipment.

Production Units Do Own Maintenance—Each production unit in the mill maintains its own maintenance and repair crew which takes care of day-to-day maintenance and ordinary repairs.

One of the problems in setting up the maintenance division was estimating the frequency of breakdowns or equipment failure in the mill.

Some of the tools included in the shop: 15 engine lathes with 16 to 60-inch swing and 4 to 50-foot beds; 4 turret lathes; 2 vertical boring mills, 72 and 120 inches; 1 48-inch slotter; 4 milling machines; 3 planers, 36, 72 and 96 inches; 48-inch rotary grinder; 2 forging hammers, 200 to 1500 pound capacity; horizontal boring mills, table and floor type; 3 shapers of 24 and 36-inch capacity.

Power—Total connected electrical load is approximately 390,000 Kva. Fairless Works will generate about one half of its own electric power with two 30,000 kw units. One is an Allis-Chalmers preferred standard unit and the other is a General Electric auto extraction unit. Remainder of power required will be purchased from the Philadelphia Electric Co., which has an initial contract to supply 60,000 kw.

Steam requirements will be 1,286,000 pounds an hour. High pressure steam—823,000 lb-hr—will be supplied by three 300,000 lb-hr boilers and will be used for the turbo-generators, turbo-blowers and service water pumps. Low pressure steam — 463,000 lb-hr — will be supplied by open hearth waste heat boilers, pressure reducing and desuper-heating station at boiler house, turbo-generator extraction and service water turbine exhaust, and induced draft fan exhaust.

Water—More than 250 million gallons of water will be required daily. About 15 million gallons will come from deep wells and will be used for special processes and "welfare" purposes. The remainder will be pumped from the Delaware River, treated, used for the blast furnaces, open hearths, coke ovens, rolling mills, turbo-generators and turbo-blower condensers. Under normal operating conditions the water will be returned to the river with the assurance that it will be equal, and, at times, superior in quality to the water pumped from the river.

The water and waste treatment plants occupy about 50 acres and provide a layout of facilities which is not possible in older plants.

. . MASONRY

ON . . . . UTILITIES

Transportation—Fairless Works includes 75 miles of standard gage track and has 520 turnouts. There are four major yards with a total capacity of 1240 cars. There are several smaller yards at the various production departments. . Motive power is provided by 19 diesel locomotives, 18 of which are 1200 horsepower 120-ton units by Baldwin-Lima-Hamilton and Fairbanks-Morse.

The other is a 500-horsepower 60-ton unit.

Traffic—Expectations are that on an average day 244 car loads of raw materials will be consumed when the plant is operating at capacity, and that there may be a surge to 400 cars per day. In addition there will be an average of 105 cars of finished steel which may increase to a maximum of 125 cars. A total in and out car handling of loads and empties per day will average 680 cars and may hit a maximum of 1040 cars.

When Venezuela ore shipments start arriving at Fairless Works in excess of the furnaces' capacity to consume, the ore will be transhipped to inland mills. By 1956, this may reach a volume of 240 cars daily.

Masonry—Each blast furnace at Fairless will require about three million, 9-inch equivalent refractory bricks, some of which cost as much as $2 each.

Each of the nine open hearths require enough brick to build 125 six-room houses, to borrow a description from U. S. Steel's masons.

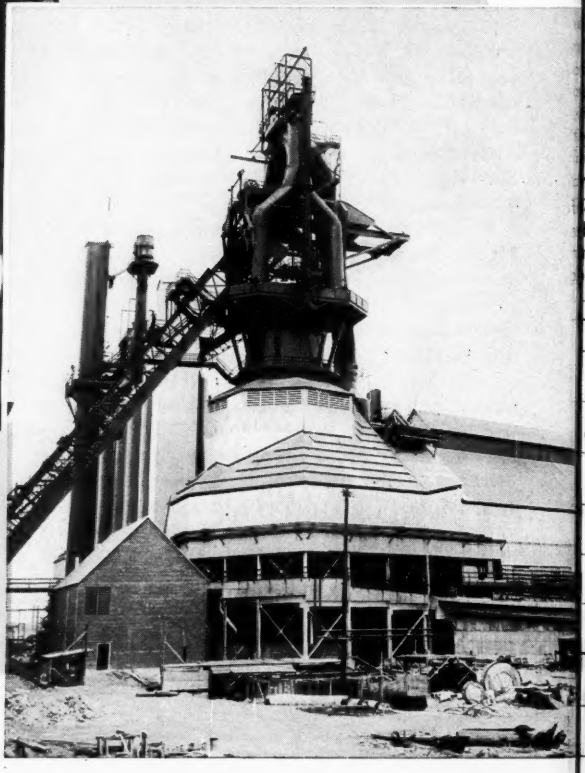
Lining and relining these pose a masonry job of some proportions, requiring a sizable crew and brick sheds of no mean dimensions. The open hearth brick shed is a 44 x 336-foot building and the general brick shed is 75 x 336 feet. Storage capacity in 9-inch equivalent brick is 3.5 million.

Looping towers to carry high-pressure steam lines present a picture of beauty and utility. Requirements for high pressure steam are 823,000 lb-hr for turbo-generators, turbo blowers and service water pumps. It will be supplied by three 300,000 lb-hr boilers, which will use 2,160,000 gallons of water daily

HISTORY IN THE MAKING

SOMETHING OLD, SOMETHING NEW: This 150 to 200-year-old house near Morrisville, Pa., was dismantled to make way for the Fairless Works, downriver from Trenton, N. J., where General George Washington carried on a bitter campaign during the Revolutionary War. Material from the house was shipped to Mt. Vernon for the restoration of Washington's former home

DOINGS ON THE DELAWARE: On a bitterly cold March 1 (1951), mindful of the days when Washington crossed the Delaware, groundbreaking ceremonies were held in a heated tent on the Fairless Works 3939-acre site. Wielding the shovel: Benjamin F. Fairless, president of U. S. Steel Co. Looking on: Gov. Alfred E. Driscoll of New Jersey (right), Irving S. Olds, then chairman of U. S. Steel (center), Gov. John S. Fine of Pennsylvania



SILHOUETTE OF THE FUTURE: Number one blast furnace nears completion at the Fairless Works. When the second furnace is complete, the two will produce nearly 1.2 million tons of pig iron per year. The Fairless plant is the largest integrated steel mill to be built at one time. It is one of the biggest expansion projects for national defense in our time

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Lee Wilson

ANNEALING FURNACE DATA SHEET

NUMBER SIX

SINGLE-STACK PORTABLE BASE FURNACES:

1 BETTER QUALITY
2 HIGHER PRODUCTION
3 LOWER FUEL COSTS
4 LOWER FIRST COST
5 LOWER MAINTENANCE
6 LOW HANDLING COSTS

SINGLE-STACK PORTABLE BASE SYSTEM SIMPLIFIES HANDLING

Because handling can become a definite cost factor in annealing departments there has always been the question of comparative handling expense of one large furnace as against several small ones.

Lee Wilson, in developing the revolutionary Portable Base Single-Stack System, made a careful comparison study of the moves required to produce 1000 tons-per-month by using single-, 4-, or 8-stack furnaces. (See Fig. 1) For all practical purposes the number of moves is the same.

However, because the single-stack furnace and inner cover is much lighter and smaller, lighter and faster handling equipment can be used to do the work. Operators find handling easier. This enables them to make the moves on the smaller single-stack furnaces much faster.

Then, too, by adopting the Portable Base Single-Stack System, users find they can operate in reduced space requirements, yet produce the same tonnage. Handling equipment can operate constantly almost directly over the annealing bay . . . there's no travel to storage for inactive furnaces or inner covers. The spaces between the single-stack bases provide ample room for inner covers during loading and unloading. (See Figs. and 3) Here are additional savings in handling time and labor.

Compare handling and you'll choose the Lee Wilson Portable Base Single-Stack System over all others. For that matter, compare the Lee Wilson System feature by feature with any other type annealing and you'll find this new approach to annealing enables users to do a better job faster — to get more flexibility into their annealing departments . . . to cut down time and maintenance costs to an absolute minimum.

Before you buy additional annealing equipment . . . check with Lee Wilson. Get all the facts about the amazing new Portable Base System. Write for illustrated brochure that fully explains the system.

1000
TONS PER MONTH

AVERAGE TONS PER STAND 40
AVERAGE STACKS PER MONTH 25

CRANE MOVES —	8-STACK	4-STACK	1-STACK
COILS — 3 COILS LOADING, 3 COILS UNLOADING	150	150	150
CONVECTORS — 2 CONVECTORS LOADING, 2 CONVECTORS UNLOADING	100	100	100
INNER COVERS - 1 PER STACK	25	25	25
FURNACE MOVES	3	6	25
	278	281	300
MOVES SAVED PER MONTH	22	19	0

Fig. 1 — Table indicates negligible savings in crane movements of multiple-stack furnaces over single-stack type; the lighter, easier-to-handle single-stack furnaces require lighter handling equipment—more than nullifying the small labor-saving advantages of the multiple-stack type.

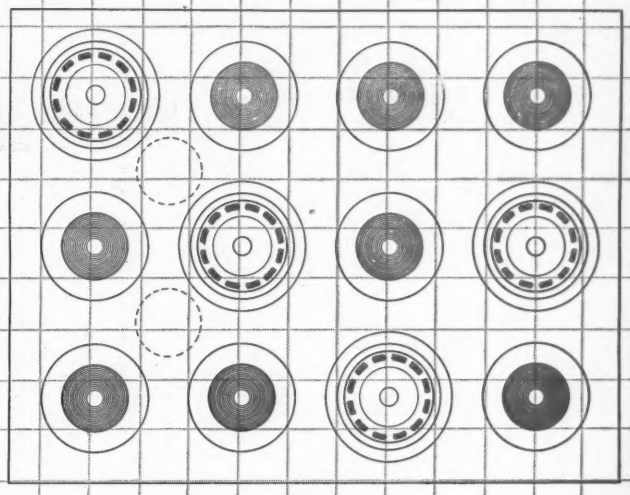

Fig. 2

Figs. 2 and 3 — Lower area requirements of Single-Stack System provide ample space for inner cover storage between bases. Handling can be made easier and faster, without long crane runs to storage areas. Lighter furnaces require only light building structure and handling equipment.

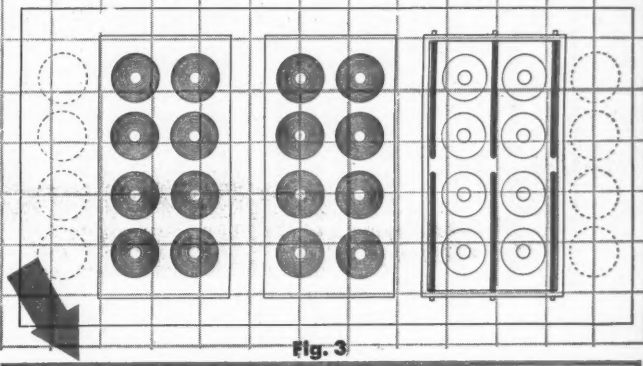

Fig. 3

SEE scale model of the new convector type single stack portable base in Booth 80, Exhibit Hall, Cleveland Public Auditorium, during the 1952 Iron and Steel Exposition.

Lee Wilson

ENGINEERING Co., Inc.

20005 WEST LAKE ROAD • CLEVELAND, OHIO
Telephone ED-1-6600

	JULY 1, 1952				JAN. 1, 1953			
	OPEN HEARTH Units—Capacity annually, net tons	BESSEMER Units—Capacity annually, net tons	ELECTRIC Units—Capacity annually, net tons	TOTAL Capacity annually, net tons	OPEN HEARTH Units—Capacity annually, net tons	BESSEMER Units—Capacity annually, net tons	ELECTRIC Units—Capacity annually, net tons	TOTAL Capacity annually, net tons
Alan Wood Steel Co.								
Ivy Rock, Pa.	8— 625,000	.. ..	.. ..	625,000	8— 625,000	.. ..	.. ..	625,000
Allegheny Ludlum Steel Corp. (Total)	5— 240,000	.. ..	31— 649,200	889,200	5— 240,000	.. ..	31— 649,200	889,200
Ferndale, Mich.	.. ..	.. ..	3— 3,000	3,000	.. ..	.. ..	3— 3,000	3,000
Dunkirk, N. Y.	.. ..	.. ..	3— 33,000	33,000	.. ..	.. ..	3— 33,000	33,000
Tonawanda, N. Y.	.. ..	.. ..	2— 4,500	4,500	.. ..	.. ..	2— 4,500	4,500
Watervliet, N. Y.	.. ..	.. ..	10— 102,000	102,000	.. ..	.. ..	10— 102,000	102,000
Brackenridge, Pa.	5— 240,000	.. ..	13— 506,700	746,700	5— 240,000	.. ..	13— 506,700	746,700
American Locomotive Co. (Total)	6— 181,000	.. ..	.. ..	181,000	6— 181,000	.. ..	.. ..	181,000
Chicago Heights, Ill.	3— 78,000	.. ..	.. ..	78,000	3— 78,000	.. ..	.. ..	78,000
Latrobe, Pa.	3— 103,000	.. ..	.. ..	103,000	3— 103,000	.. ..	.. ..	103,000
Armco Steel Corp. (Total)	25— 2,545,000	.. ..	9— 396,000	2,941,000	25— 2,725,000	.. ..	9— 396,000	3,121,000
Ashland, Ky.	8— 860,000	.. ..	.. ..	860,000	8— 860,000	.. ..	.. ..	860,000
Baltimore, Md.	.. ..	.. ..	6— 102,000	102,000	.. ..	.. ..	6— 102,000	102,000
Middletown, O.	11— 1,277,000	.. ..	2— 228,000	1,505,000	11— 1,457,000	.. ..	2— 228,000	1,685,000
Butler, Pa.	6— 408,000	.. ..	1— 66,000	474,000	6— 408,000	.. ..	1— 66,000	474,000
Sheffield Steel Corp. (Total)	14— 1,434,000	.. ..	2— 300,000	1,734,000	14— 1,434,000	.. ..	2— 300,000	1,734,000
Kansas City, Mo.	5— 480,000	.. ..	1— 150,000	630,000	5— 480,000	.. ..	1— 150,000	630,000
Sand Springs, Okla.	1— 54,000	.. ..	.. ..	54,000	1— 54,000	.. ..	.. ..	54,000
Houston, Tex.	8— 900,000	.. ..	1— 150,000	1,050,000	8— 900,000	.. ..	1— 150,000	1,050,000
Atlantic Steel Co.								
Atlanta, Ga.	3— 188,000	.. ..	1— 112,000	300,000	3— 188,000	.. ..	1— 112,000	300,000
Babcock & Wilcox Co.								
Beaver Falls, Pa.	.. ..	.. ..	3— 133,450	133,450	.. ..	.. ..	4— 229,450	229,450
Baldwin-Lima-Hamilton Corp. Standard Steel Works Division								
Burnham, Pa.	5— 169,920	.. ..	.. ..	169,920	5— 169,920	.. ..	.. ..	169,920
Barium Steel Corp. (Total)	13— 840,030	.. ..	1— 30,000	870,030	13— 840,030	.. ..	1— 30,000	870,030
Central Iron & Steel Co.								
Harrisburg, Pa.	5— 360,000	.. ..	1— 30,000	390,000	5— 360,000	.. ..	1— 30,000	390,000
Industrial Forge & Steel Co.								
Canton, O.	2— 48,600	.. ..	.. ..	48,600	2— 48,600	.. ..	.. ..	48,600
Phoenix Iron & Steel Co.								
Phoenixville, Pa.	6— 431,430	.. ..	.. ..	431,430	6— 431,430	.. ..	.. ..	431,430
Bethlehem Steel Corp.								
Bethlehem Steel Co. (Total)	123—15,466,000	3— 336,000	8— 158,000	15,960,000	127—16,186,000	2— 336,000	8— 158,000	16,680,000[1]
Lackawanna, N. Y.	30— 4,020,000	.. ..	.. ..	4,020,000	.. ..	.. ..	.. ..	.....
Bethlehem, Pa.	32— 2,970,000	.. ..	8— 158,000	3,128,000	.. ..	.. ..	.. ..	.....
Johnstown, Pa.	21— 2,100,000	.. ..	.. ..	2,100,000	.. ..	.. ..	.. ..	.....
Steelton, Pa.	12— 1,312,000	.. ..	.. ..	1,312,000	.. ..	.. ..	.. ..	.....
Sparrows Point, Md.	28— 5,064,000	3— 336,000	.. ..	5,400,000	.. ..	.. ..	.. ..	.....
Bethlehem Pacific Coast Steel Corp. (Total)	10— 456,000	.. ..	3— 384,000	840,000	10— 456,000[1]	.. ..	3— 384,000[1]	840,000[1]
Los Angeles	.. ..	.. ..	3— 384,000	384,000	.. ..	.. ..	.. ..	.....
South San Francisco	5— 240,000	.. ..	.. ..	240,000	.. ..	.. ..	.. ..	.....
Seattle, Wash.	5— 216,000	.. ..	.. ..	216,000	.. ..	.. ..	.. ..	.....
Boiardi Steel Corp.								
Milton, Pa.	.. ..	.. ..	2— 50,000	50,000	.. ..	.. ..	2— 50,000	50,000
Borg-Warner Corp.								
New Castle, Ind.	.. ..	.. ..	3— 30,000	30,000	.. ..	.. ..	4— 64,000	64,000
Braeburn Alloy Steel Corp.								
Braeburn, Pa.	.. ..	.. ..	2— 20,730	20,730	.. ..	.. ..	2— 20,730	20,730
Byers Co., A. M.								
Harmony Township, Pa.	.. ..	2— 324,000	2— 75,000	399,000	.. ..	2— 324,000	2— 75,000	399,000
Carpenter Steel Co.								
Reading, Pa.	.. ..	.. ..	10— 85,805	85,805	.. ..	.. ..	10— 85,805	85,805
Colorado Fuel & Iron Corp. (Total)	27— 2,094,000	.. ..	.. ..	2,094,000	27— 2,120,570	.. ..	.. ..	2,120,570
Pueblo, Colo.	16— 1,386,000	.. ..	.. ..	1,386,000	16— 1,386,000	.. ..	.. ..	1,386,000
Tonawanda, N. Y.	4— 240,000	.. ..	.. ..	240,000	4— 240,000	.. ..	.. ..	240,000
Claymont, Del.	7— 468,000	.. ..	.. ..	468,000	7— 494,570	.. ..	.. ..	494,570
Columbia Tool Steel Co.								
Chicago Heights, Ill.	.. ..	.. ..	2— 6,600	6,600	.. ..	.. ..	2— 6,600	6,600
Connors Steel Co.								
Birmingham, Ala.	.. ..	.. ..	3— 72,000	72,000	.. ..	.. ..	3— 72,000	72,000
Continental Steel Corp.								
Kokomo, Ind.	5— 394,000	.. ..	.. ..	394,000	5— 394,000	.. ..	.. ..	394,000
Copperweld Steel Co.								
Warren, O.	.. ..	.. ..	7— 554,400	554,400	.. ..	.. ..	7— 554,400	554,400
Crucible Steel Co. of America (Total)	10— 891,000	.. ..	25— 373,960	1,264,960	10— 972,000	.. ..	25— 373,960	1,345,960
Harrison, N. J.	.. ..	.. ..	13— 2,360	2,360	.. ..	.. ..	13— 2,360	2,360
Syracuse, N. Y.	.. ..	.. ..	7— 59,600	59,600	.. ..	.. ..	7— 59,600	59,600
Midland, Pa.	10— 891,000	.. ..	5— 312,000	1,203,000	10— 972,000	.. ..	5— 312,000	1,284,000
Detroit Steel Corp.								
Portsmouth, O.	10— 660,000	.. ..	.. ..	660,000	10— 660,000	.. ..	.. ..	660,000
Disston & Sons Inc., Henry								
Philadelphia, Pa.	.. ..	.. ..	2— 25,000	25,000	.. ..	.. ..	2— 25,000	25,000

Syracuse, N. Y.	..	.....	..	.....	7—	59,600	59,600	..	.....	..	.....	7—	59,600	59,600
Midland, Pa.	10—	891,000	..	.....	5—	312,000	1,203,000	10—	972,000	..	.....	5—	312,000	1,284,000
Detroit Steel Corp.														
Portsmouth, O.	10—	660,000	..	.....	..	.....	660,000	10—	660,000	..	.....	..	.....	660,000
Disston & Sons Inc., Henry														
Philadelphia, Pa.	..	.....	..	.....	2—	25,000	25,000	..	.....	..	.....	2—	25,000	25,000
Eastern Stainless Steel Corp.														
Colgate, Md.	..	.....	..	.....	4—	14,400	14,400	..	.....	..	.....	5—	32,400	32,400
Edgewater Steel Co.														
Oakmont, Pa.	3—	89,890	..	.....	..	.....	89,890	3—	89,890	..	.....	..	.....	89,890
Empire Steel Co.														
Mansfield, O.	7—	470,320	..	.....	..	.....	470,320	7—	470,320	..	.....	..	.....	470,320
Erie Forge & Steel Corp.														
Erie, Pa.	4—	234,000	..	.....	..	.....	234,000	4—	234,000	..	.....	..	.....	234,000
A. Finkl & Sons Co.														
Chicago, Ill.	..	.....	..	.....	2—	60,000	60,000	..	.....	..	.....	2—	60,000	60,000
Firth Sterling Inc.														
McKeesport, Pa.	..	.....	..	.....	3—	20,040	20,040	..	.....	..	.....	3—	20,040	20,040
Ford Motor Co.														
Dearborn, Mich.	10—	1,260,000	..	.....	5—	201,000	1,461,000	10—	1,260,000	..	.....	5—	201,000	1,461,000
Granite City Steel Co.														
Granite City, Ill.	13—	720,000	..	.....	..	.....	720,000	13—	720,000	..	.....	..	.....	720,000
Harrisburg Steel Corp.														
Harrisburg, Pa.	3—	100,750	..	.....	..	.....	100,750	3—	100,750	..	.....	..	.....	100,750
Heppenstall Co.														
Pittsburgh, Pa.	2—	58,000	..	.....	1—	4,800	62,800	2—	58,000	..	.....	1—	4,800	62,800
Hoster Steel Corp.														
Oklahoma City, Okla.	..	.....	..	.....	1—	12,000	12,000	..	.....	..	.....	1—	12,000	12,000
Inland Steel Co.														
Indiana Harbor, Ind.	36—	3,750,000	..	.....	..	.....	3,750,000	40—	4,500,000	..	.....	..	.....	4,500,000
International Harvester Co.														
South Chicago, Ill.	11—	900,000	..	.....	..	.....	900,000	11—	900,000	..	.....	..	.....	900,000
Isaacson Iron Works														
Seattle, Wash.	..	.....	..	.....	2—	120,000	120,000	..	.....	..	.....	2—	120,000	120,000
Jessop Steel Co.														
Washington, Pa.	..	.....	..	.....	4—	33,500	33,500	..	.....	..	.....	4—	33,500	33,500
Jones & Laughlin Steel Corp. (Total)	36—	4,415,500[3]	3—	582,000	1—	1,500	4,999,000[3]	..	4,415,500[3]	..	582,000	..	1,500	4,999,000[3]
Cleveland, O.	11—	1,155,000	..	.....	..	.....	1,155,000	..	.....	..	.....	..	.....	.....
Aliquippa, Pa.	5—	1,182,000	3—	582,000	..	.....	1,764,000	..	.....	..	.....	..	.....	.....
Pittsburgh, Pa.	20—	2,078,500	..	.....	1—	1,500	2,080,000	..	.....	..	.....	..	.....	.....
Joslyn Mfg. & Supply Co.														
Ft. Wayne, Ind.	..	.....	..	.....	3—	37,500	37,500	..	.....	..	.....	3—	37,500	37,500
Judson Steel Corp.														
Emeryville, Calif.	3—	76,500	..	.....	..	.....	76,500	3—	76,500	..	.....	..	.....	76,500
Kaiser Steel Corp.														
Fontana, Calif.	8—	1,380,000	..	.....	..	.....	1,380,000	8—	1,380,000	..	.....	..	.....	1,380,000
Keystone Steel & Wire Co.														
Peoria, Ill.	4—	400,000	..	.....	..	.....	400,000	4—	400,000	..	.....	..	.....	400,000
Kilby Steel Co.														
Anniston, Ala.	..	.....	..	.....	1—	34,020	34,020	..	.....	..	.....	1—	34,020	34,020
Knoxville Iron Co.														
Knoxville, Tenn.	..	.....	..	.....	2—	38,000	38,000	..	.....	..	.....	2—	38,000	38,000
Laclede Steel Co.														
Alton, Ill.	4—	410,000	..	.....	..	.....	410,000	4—	435,000	..	.....	..	.....	435,000
Latrobe Electric Steel Co.														
Latrobe, Pa.	..	.....	..	.....	5—	19,000	19,000	..	.....	..	.....	5—	19,000	19,000
R. G. LeTourneau Inc.														
Longview, Tex.	..	.....	..	.....	1—	25,000	25,000	..	.....	..	.....	3—	75,000	75,000
Lone Star Steel Co.														
Lone Star, Tex.	..	.....	..	.....	..	.....	.....	4—	500,000	..	.....	..	.....	500,000
Lukens Steel Co.														
Coatesville, Pa.	12—	675,000	..	.....	..	.....	675,000	12—	675,000	..	.....	..	.....	675,000
McLouth Steel Corp.														
Trenton, Mich.	..	.....	..	.....	4—	555,000	555,000	..	.....	..	.....	4—	555,000	555,000
Mesta Machine Co.														
West Homestead, Pa.	4—	85,000	..	.....	1—	20,000	105,000	4—	85,000	..	.....	1—	20,000	105,000
Midvale Co.														
Philadelphia, Pa.	4—	184,917	..	.....	6—	139,028	323,945	4—	184,917	..	.....	6—	139,028	323,945
National Forge & Ordnance Co.														
Irvine, Pa.	..	.....	..	.....	3—	25,000	25,000	..	.....	..	.....	3—	25,000	25,000
National Steel Corp. (Total)	30—	5,100,000	[4]	.....	..	.....	5,100,000	30—	5,100,000	[4]	.....	..	.....	5,100,000
Great Lakes Steel Corp.														
Ecorse, Mich.	17—	2,600,000	[2]	.....	..	.....	2,600,000	17—	3,150,000	[2]	.....	..	.....	3,150,000
Weirton Steel Co.														
Weirton, W. Va.	13—	2,500,000	[2]	.....	..	.....	2,500,000	13—	2,500,000	[2]	.....	..	.....	2,500,000
National Supply Co.														
Torrance, Calif.	..	.....	..	.....	3—	50,200	50,200	..	.....	..	.....	3—	50,200	50,200

(*Please turn to Page* 148)

	JULY 1, 1952				JAN. 1, 1953			
	OPEN HEARTH Units—Capacity annually, net tons	BESSEMER Units—Capacity annually, net tons	ELECTRIC Units—Capacity annually, net tons	TOTAL Capacity annually, net tons	OPEN HEARTH Units—Capacity annually, net tons	BESSEMER Units—Capacity annually, net tons	ELECTRIC Units—Capacity annually, net tons	TOTAL Capacity annually, net tons
Newport Steel Corp.								
Newport, Ky.	7— 375,321	.. ..	3— 333,200	708,521	7— 375,321	.. ..	3— 333,200	708,521
Northwest Steel Rolling Mills Inc.								
Seattle, Wash.	.. ..	.. ..	1— 32,400	32,400	.. ..	.. ..	1— 32,400	32,400
Northwestern Steel & Wire Co.								
Sterling, Ill.	.. ..	.. ..	4— 573,000	573,000	.. ..	.. ..	5— 825,000	825,000
Ohio River Steel Corp.								
Toronto, O.	4— 121,200	.. ..	.. ..	121,200	4— 121,200	.. ..	.. ..	121,200
Oregon Steel Mills								
Portland, Oreg.	.. ..	.. ..	3— 105,000	105,000	.. ..	.. ..	3— 105,000	105,000
Pacific States Steel Corp.								
Niles, Calif.	2— 140,000	.. ..	4— 182,600	322,600	2— 140,000	.....	4— 182,600	322,600
Pittsburgh Steel Co.								
Monessen, Pa.	12— 1,200,000	.. ..	.. ..	1,200,000	12— 1,392,000	.. ..	.. ..	1,392,000
Republic Steel Corp. (Total)	74— 7,550,000	2— 665,000	26— 1,275,000	9,490,000	.. 8,295,000	.. 665,000	.. 1,323,000	10,283,000
Gadsden, Ala.	8— 789,000	.. ..	.. ..	789,000	.. ..	.. ..	.. ..	.....
South Chicago, Ill.	4— 532,000	.. ..	9— 600,000	1,132,000	.. ..	.. ..	.. ..	.....
Buffalo, N. Y.	9— 882,000	.. ..	.. ..	882,000	.. ..	.. ..	.. ..	.....
Canton O.	6— 450,000	.. ..	17— 675,000	1,125,000	.. ..	.. ..	.. ..	.....
Cleveland, O.	15— 1,900,000	.. ..	.. ..	1,900,000	.. ..	.. ..	.. ..	.....
Massillon, O.	9— 620,000	.. ..	.. ..	620,000	.. ..	.. ..	.. ..	.....
Youngstown, O.	15— 1,477,000	2— 665,000	.. ..	2,142,000	.. ..	.. ..	.. ..	.....
Warren, O.	8— 900,000	.. ..	.. ..	900,000	.. ..	.. ..	.. ..	.....
Roebling's Sons Co., J. A.								
Roebling, N. J.	9— 224,500	.. ..	.. ..	224,500	9— 224,500	.. ..	.. ..	224,500
Rotary Electric Steel Co.								
Detroit, Mich.	.. ..	.. ..	5— 425,000	425,000	.. ..	.. ..	5— 425,000	425,000
Seidelhuber Steel Rolling Mill Corp.								
Seattle, Wash.	.. ..	.. ..	1— 60,000	60,000	.. ..	.. ..	1— 60,000	60,000
Sharon Steel Corp. (Total)	19— 1,478,000	.. ..	2— 72,000	1,550,000	19— 1,478,000	.. ..	2— 72,000	1,550,000
Farrell, Pa.	14— 1,000,000	.. ..	.. ..	1,000,000	14— 1,000,000	.. ..	.. ..	1,000,000
Lowellville, O.	5— 478,000	.. ..	2— 72,000	550,000	5— 478,000	.. ..	2— 72,000	550,000
Simonds Saw & Steel Co.								
Lockport, N. Y.	.. ..	.. ..	3— 21,600	21,600	.. ..	.. ..	3— 21,600	21,600
Stanley Works								
Bridgeport, Conn.	3— 175,000	.. ..	.. ..	175,000	3— 175,000	.. ..	.. ..	175,000
Southwest Steel Rolling Mills								
Los Angeles, Calif.	.. ..	.. ..	1— 36,000	36,000	.. ..	.. ..	1— 36,000	36,000
Texas Steel Co.								
Ft. Worth, Tex.	.. ..	.. ..	2— 36,000	36,000	.. ..	.. ..	2— 36,000	36,000
Timken Roller Bearing Co.								
Canton, O.	3— 201,600	.. ..	6— 345,600	547,200	.. ..	.. ..	9— 625,000	625,000
Union Electric Steel Corp.								
Carnegie, Pa.	.. ..	.. ..	2— 26,760	26,760	.. ..	.. ..	2— 26,760	26,760
United States Steel Corp.: (Total)	298—31,802,100	11— 2,472,000	10— 368,500	34,642,600	298—31,802,100[1]	11— 2,472,000[1]	10— 368,500[1]	34,642,600[1]
American Steel & Wire Div. (Total)	26— 2,093,000	.. ..	.. ..	2,093,000	.. ..	.. ..	.. ..	.....
Worcester, Mass.	4— 275,000	.. ..	.. ..	275,000	.. ..	.. ..	.. ..	.....
Duluth, Minn.	9— 918,000	.. ..	.. ..	918,000	.. ..	.. ..	.. ..	.....
Donora, Pa.	13— 900,000	.. ..	.. ..	900,000	.. ..	.. ..	.. ..	.....
Columbia-Geneva Steel Div. (Total)	21— 2,166,400	.. ..	.. ..	2,178,400	.. ..	.. ..	.. ..	.....
Torrance, Calif.	4— 201,700	.. ..	1— 12,000	213,700	.. ..	.. ..	.. ..	.....
Pittsburg, Calif.	7— 364,700	.. ..	.. ..	364,700	.. ..	.. ..	.. ..	.....
Geneva, Utah	10— 1,600,000	.. ..	.. ..	1,600,000	.. ..	.. ..	.. ..	.....
National Tube Div.: (Total)	15— 2,336,000	6— 1,188,000	.. ..	3,524,000	.. ..	.. ..	.. ..	.....
Lorain, O.	12— 1,400,000	3— 900,000	.. ..	2,300,000	.. ..	.. ..	.. ..	.....
McKeesport, Pa.	3— 936,000	3— 288,000	.. ..	1,224,000	.. ..	.. ..	.. ..	.....
Tennessee Coal & Iron Div. (Total)	21— 3,027,000	.. ..	.. ..	3,027,000	.. ..	.. ..	.. ..	.....
Ensley, Ala.	9— 1,625,000	.. ..	.. ..	1,625,000	.. ..	.. ..	.. ..	.....
Fairfield, Ala.	12— 1,402,000	.. ..	.. ..	1,402,000	.. ..	.. ..	.. ..	.....
United States Steel Co. (Total)	215—22,179,700	5— 1,284,000	9— 356,500	23,820,200	.. ..	.. ..	.. ..	.....
South Chicago, Ill.	31— 4,200,000	3— 500,000	3— 191,000	4,891,000	.. ..	.. ..	.. ..	.....
Gary, Ind.	55— 6,264,400	.. ..	.. ..	6,264,400	.. ..	.. ..	.. ..	.....
Youngstown, O.	15— 1,900,000	2— 784,000	.. ..	2,684,000	.. ..	.. ..	.. ..	.....
Braddock, Pa.	16— 2,080,400	.. ..	.. ..	2,080,400	.. ..	.. ..	.. ..	.....
Clairton, Pa.	12— 900,000	.. ..	.. ..	900,000	.. ..	.. ..	.. ..	.....
Duquesne, Pa.	27— 1,900,000	.. ..	4— 160,000	2,060,000	.. ..	.. ..	.. ..	.....
Johnstown, Pa.	2— 18,900	.. ..	2— 5,500	24,400	.. ..	.. ..	.. ..	.....
Munhall, Pa.	45— 4,366,000	.. ..	.. ..	4,366,000	.. ..	.. ..	.. ..	.....
Vandergrift, Pa.	12— 550,000	.. ..	.. ..	550,000	.. ..	.. ..	.. ..	.....
Universal Cyclops Steel Corp.								
Bridgeville, Pa.	.. ..	.. ..	5— 70,160	70,160	.. ..	.. ..	5— 70,160	70,160
Vanadium-Alloys Steel Co.								
Latrobe, Pa.	.. ..	.. ..	3— 10,000	10,000	.. ..	.. ..	4— 10,500	10,500
Colonial Steel Co.								
Monaca, Pa.	.. ..	.. ..	1— 9,000	9,000	.. ..	.. ..	2— 24,000	24,000
Vulcan Crucible Steel Co.								
Aliquippa, Pa.	.. ..	.. ..	2— 9,600	9,600	.. ..	.. ..	2— 9,600	9,600

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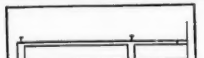
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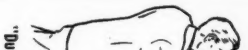
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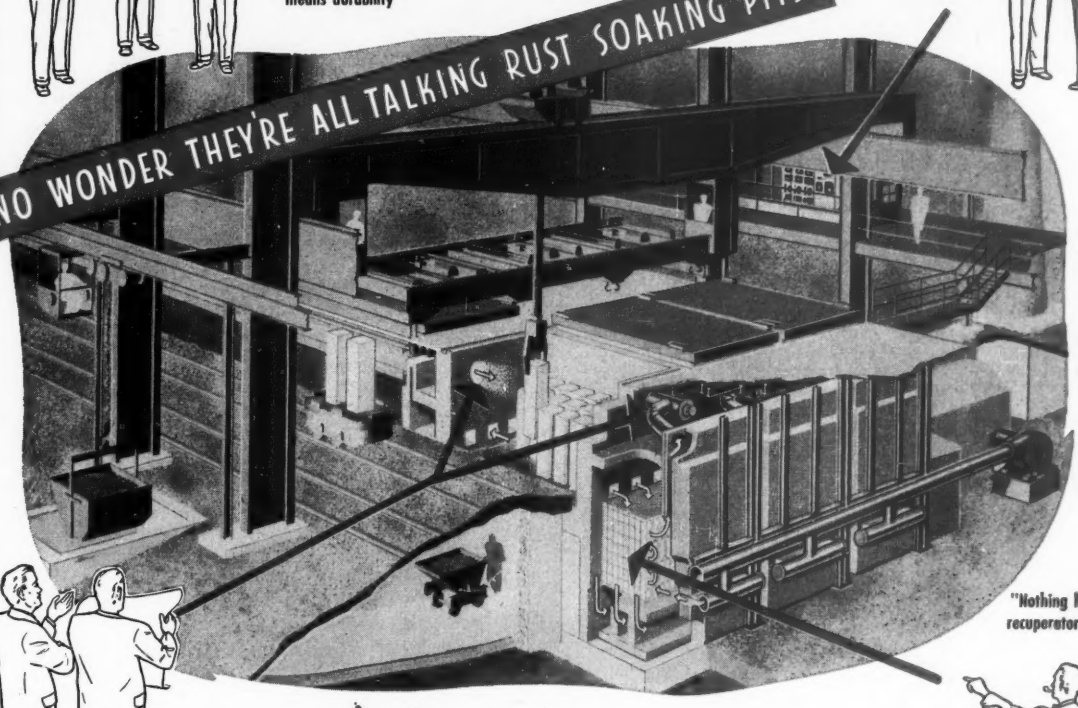
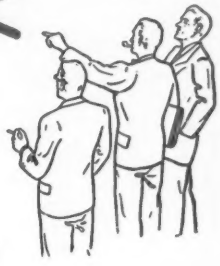
"Rugged construction means durability"

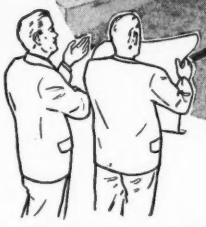
"Control is fully automatic for utmost efficiency"

NO WONDER THEY'RE ALL TALKING RUST SOAKING PITS



"Nothing like the Rust recuperator for economy"





"Dual burners assure uniformity, greater charging capacity"

New **CONTINUOUS 2-WAY TOP-FIRED**

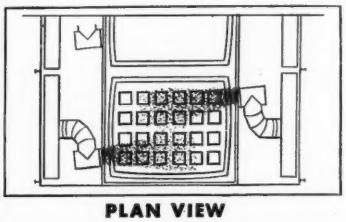
RECUPERATIVE SOAKING PITS

raise the standard for outstanding results

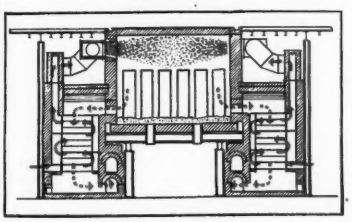
Naturally, furnace men are impressed with the improvements provided by Rust's new ultra modern recuperative soaking pits. Heat is uniformly balanced by diagonal two-way firing and ingots soak out evenly. Absence of impingement increases life of refractory walls and covers. Design permits construction in batteries of two or more holes, use of all fuels.

Rust also builds regenerative type soaking pits of new modern design. Those now in operation are producing results in fuel economy and heating speed never before achieved.

Whether you are interested in new recuperative or regenerative soaking pits, or require a modernization job you can rely on Rust. Over a quarter-century of experience is your guarantee.



PLAN VIEW



CROSS SECTION

THE WHOLE JOB IS ONE JOB WITH A "RUST PACKAGE CONTRACT"

One contract covers everything . . . from blue-print through start up. Rust assumes responsibility for design, manufacture, erection, and is prepared to undertake all phases of the work with its own forces, including wiring and piping. This results in substantial savings . . . One profit instead of pyramiding ones which accrue where many subs are employed.

RUST FURNACE COMPANY

Pioneers in Furnace Design

PITTSBURGH - PENNSYLVANIA

F-5

	JULY 1, 1952				JAN. 1, 1953			
	OPEN HEARTH Units—Capacity annually, net tons	BESSEMER Units—Capacity annually, net tons	ELECTRIC Units—Capacity annually, net tons	TOTAL Capacity annually, net tons	OPEN HEARTH Units—Capacity annually, net tons	BESSEMER Units—Capacity annually, net tons	ELECTRIC Units—Capacity annually, net tons	TOTAL Capacity annually, net tons
Washburn Wire Co.								
Phillipsdale, R. I.	4— 100,000	.. ..	.. ..	100,000	4— 100,000	.. ..	.. ..	100,000
West Virginia Steel & Mfg. Co.								
Huntington, W. Va.	.. ..	.. ..	.. ..	.....	.. ..	.. ..	1— 87,000	87,000
Wheeling Steel Corp.: (Total)	11— 1,440,000	2— 420,000	.. ..	1,860,000	11— 1,440,000	2— 420,000	.. ..	1,860,000
Benwood, W. Va.	.. ..	2— 420,000	.. ..	420,000	.. ..	2— 420,000	.. ..	420,000
Steubenville, O.	11— 1,440,000	.. ..	.. ..	1,440,000	11— 1,440,000	.. ..	.. ..	1,440,000
Youngstown Sheet & Tube Co. (Total)	33— 3,800,000	4— 573,000	.. ..	4,373,000	41— 5,010,000	2— 240,000	.. ..	5,250,000
Indiana Harbor, Ind.	9— 1,196,000	2— 333,000	.. ..	1,529,000	17— 2,406,000	.. ..	.. ..	2,406,000
Campbell, O.	12— 1,422,000	2— 240,000	.. ..	1,662,000	12— 1,422,000	2— 240,000	.. ..	1,662,000
Youngstown, O.	12— 1,182,000	.. ..	.. ..	1,182,000	12— 1,182,000	.. ..	.. ..	1,182,000
Grand Total	937—95,101,548	31— 5,372,000	252— 8,857,553	109,331,101	.. 99,879,518	.. 5,039,000	.. 9,737,453	114,655,971

(1) Estimated by STEEL. (2) Used in melting charge for open hearths.

COAL CHEMICAL RECOVERY OVENS

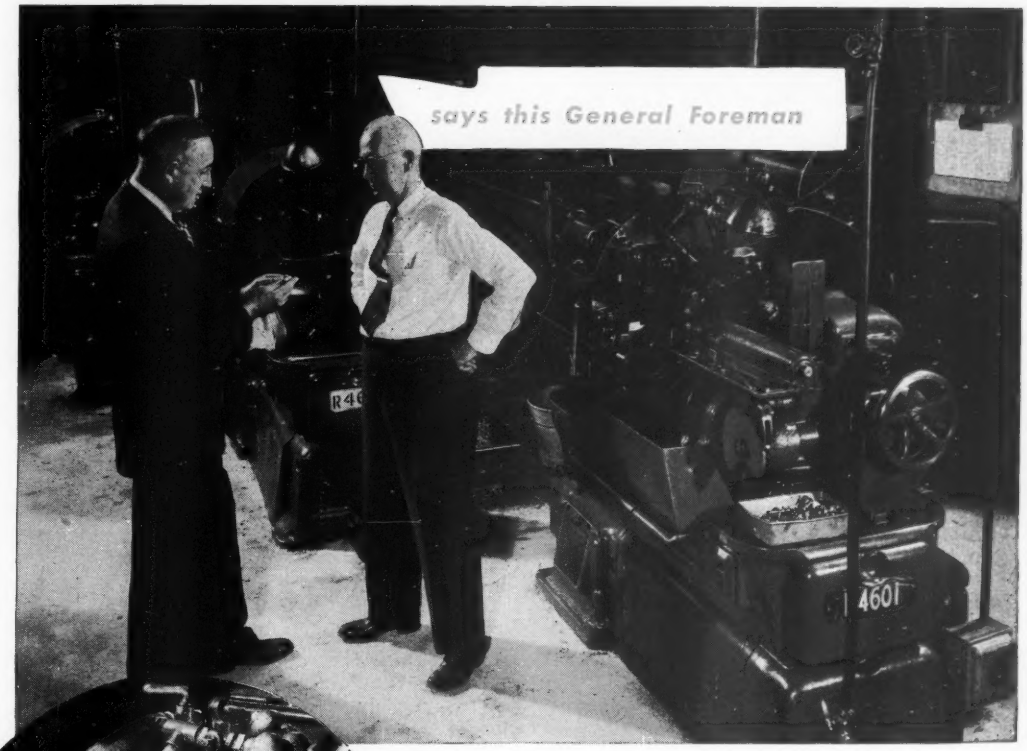
	Capacity July 1, 1952 ovens—capacity annually, net tons	Capacity Jan. 1, 1953 ovens—capacity annually, net tons	Expansion Underway or Planned ovens—capacity annually, net tons	Completion Date	TOTAL Anticipated Annual Capacity net tons
Alan Wood Steel Co.					
Swedeland, Pa.	151— 600,000	151— 600,000	.. ..	.....	600,000
Armco Steel Corp.					
Hamilton, O.	110— 558,000	110— 558,000	.. ..	.....	558,000
Middletown, O.	.. ..	76— 446,000	76— 446,000	11/52	446,000
Sheffield Steel Corp.					
Houston, Texas	47— 270,000	47— 324,000	35— 54,000	7/1/53	378,000
Bethlehem Steel Co. (Total)	1,916— 9,546,000	1,916 9,546,000[1]	.. ..	.....	9,546,000[1]
Sparrows Pt., Md.	551— 2,928,000	.. ..	.. ..	.....	.....
Lackawanna, N. Y.	383— 2,022,000	.. ..	.. ..	.....	.....
Bethlehem, Pa.	416— 1,680,000	.. ..	.. ..	.....	.....
Johnstown, Pa.	436— 2,268,000	.. ..	.. ..	.....	.....
Steelton, Pa.	130— 648,000	.. ..	.. ..	.....	.....
Colorado Fuel & Iron Corp.					
Pueblo, Colo.	266— 1,220,000	266— 1,220,000	.. ..	.....	1,220,000
Crucible Steel Co. of America					
Midland, Pa.	184— 720,000	213— 831,600	29— 111,600	4thQ.'52	831,600
Delaware River Steel Corp.					
New Castle county, Del.	.. ..	.. ..	.. 430,000	.....	430,000
Detroit Steel Corp.					
Portsmouth, O.	108— 480,000	108— 480,000	.. ..	.....	480,000
Donner-Hanna Coke Corp.					
Buffalo, N. Y.	252— 1,323,000	252— 1,323,000	.. ..	.....	1,323,000
Eastern Gas & Fuel Associates					
Everett, Mass.	204— 1,112,000	204— 1,112,000	.. ..	.....	1,112,000
Ford Motor Co.					
Dearborn, Mich.	183— 1,225,000	220— 1,430,000[2]	37— 205,000	4thQ.'52	1,430,000[2]
Granite City Steel Co.					
Granite City, Ill.	49— 310,000	76— 440,000	27— 130,000	1/1/53	440,000
Inland Steel Co.					
Indiana Harbor, Ind.	418— 2,143,400	418— 2,143,400	.. ..	.....	2,143,400
Interlake Iron Corp. (Total)	333— 1,333,400	333— 1,333,400	57— 292,000	.....	1,625,400
Chicago, Ill.	120— 396,200	120— 396,200	.. ..	.....	396,200
Duluth, Minn.	61— 314,000	61— 314,000	.. ..	.....	314,000
Toledo, O.	94— 372,600	94— 372,600	57— 292,000	3/31/53	664,600
Erie, Pa.	58— 250,600	58— 250,600	.. ..	.....	250,600
International Harvester Co.					
South Chicago, Ill.	148— 680,500	148— 680,500	.. ..	.....	680,500
Jones & Laughlin Steel (Total)	812— 3,905,500	812— 3,905,000	.. ..	.....	3,905,500
Cleveland, O.	100— 328,500	100— 328,500	.. ..	.....	328,500
Aliquippa, Pa.	352— 2,190,000	352— 2,190,000	.. ..	.....	2,190,000
Pittsburgh, Pa.	360— 1,387,000	360— 1,387,000	.. ..	.....	1,387,000
Kaiser Steel Corp.					
Fontana, Calif.	135— 566,000	135— 566,000	90— 440,000	4/53	1,006,000
Lone Star Steel Co.					
Lone Star, Texas	78— 438,000	78— 438,000	.. ..	.....	438,000
Michigan Iron & Coke Co.					
St. Clair, Mich.	.. ..	.. ..	55— 350,000	2/54	350,000
National Steel Corp. (Total)	395— 2,630,000	465— 3,110,000	70— 480,000	.....	3,110,000
Great Lakes Steel Corp.					
River Rouge, Mich.	146— 1,120,000	216— 1,600,000	70— 480,000	12/52	1,600,000
Weirton Steel Co.					
Weirton, W. Va.	249— 1,510,000	249— 1,510,000	.. ..	.....	1,510,000
North American Steel Co.					
Camanche, Iowa	.. ..	.. ..	94	.....	.....
Pittsburgh Coke & Chemical Co.					
Neville Island, Pa.	140— 1,000,000	140— 1,000,000	.. ..	.....	1,000,000
Pittsburgh Steel Co.					
Monessen, Pa.	74— 498,000	74— 498,000	.. ..	.....	498,000
Republic Steel Corp. (Total)	1,023— 5,245,000	.. 6,100,000	.. 855,000	1952	6,100,000
Birmingham, Ala.	57— 250,000	.. ..	.. ..	.....	.....
Gadsden, Ala.	102— 565,000	.. ..	.. ..	.....	.....
South Chicago, Ill.	75— 460,000	.. ..	.. ..	.....	.....
Canton, O.	62— 240,000	.. ..	.. ..	.....	.....
Cleveland, O.	279— 1,345,000	.. ..	.. ..	.....	.....
Massillon, O.	49— 215,000	.. ..	.. ..	.....	.....
Warren, O.	141— 870,000	.. ..	.. ..	.....	.....
Troy, N. Y.	86— 300,000	.. ..	.. ..	.....	.....
Youngstown, O.	172— 1,000,000	.. ..	.. ..	.....	.....
Sharon Steel Corp.					
Fairmont, W. Va.	60— 225,000	60— 225,000	.. ..	.....	225,000
Sloss-Sheffield Steel & Iron Co.					
North Birmingham, Ala.	150— 861,000	150— 861,000	.. ..	.....	861,000
Tennessee Prod. & Chem. Corp.					
Chattanooga, Tenn.	44— 240,000	44— 240,000	.. ..	.....	240,000
U. S. Steel Corp. (Total)	4,554—21,612,690	4,641—22,528,690[2]	.. ..	.....	22,528,690[2]
American Steel & Wire Div.					
(Total)	294— 1,318,270	.. ..	.. ..	.....	.....
Duluth, Minn.	114— 483,600	.. ..	.. ..	.....	.....
Cleveland, O.	180— 834,670	.. ..	.. ..	.....	.....
Columbia-Geneva Steel (Total)	308— 1,212,300	.. ..	.. ..	.....	.....
Geneva, Utah	252— 1,012,300	.. ..	.. ..	.....	.....
Ironton, Utah	56— 200,000	.. ..	.. ..	.....	.....
National Tube Div.					
Lorain, O.	385— 1,766,750	.. ..	.. ..	.....	.....
Tennessee Coal & Iron					
Fairfield, Ala.	572— 2,945,550	.. ..	.. ..	.....	.....
U. S. Steel Co. (Total)	2,995—14,369,820	.. ..	.. ..	.....	.....
Joliet, Ill.	280— 1,071,520	.. ..	.. ..	.....	.....
Gary, Ind.	1,148— 5,855,100	.. ..	.. ..	.....	.....
Clairton, Pa.	1,567— 7,443,200	.. ..	.. ..	.....	.....
Morrisville, Pa.	....	87— 932,000	.. 932,000	.....	932,000
Wheeling Steel Corp.					
East Steubenville, W. Va.	314— 1,720,000	314— 1,720,000	.. ..	.....	1,720,000
Woodward Iron Co.					
Woodward, Ala.	256— 940,000	256— 940,000	.. ..	.....	940,000
Youngstown Sheet & Tube Co.					
(Total)	580— 2,784,000	655— 3,264,000	75— 480,000	.....	3,264,000
South Chicago, Ill.	70— 444,000	70— 444,000	.. ..	.....	444,000
Indiana Harbor, Ind.	120— 648,000	195— 1,128,000	75— 480,000	fall '52	1,128,000
Campbell, O.	306— 1,320,000	306— 1,320,000	.. ..	.....	1,320,000
Youngstown, O.	84— 372,000	84— 372,000	.. ..	.....	372,000
Grand Total	 64,186,490	 67,880,090	.. 5,205,600	.....	69,446,090

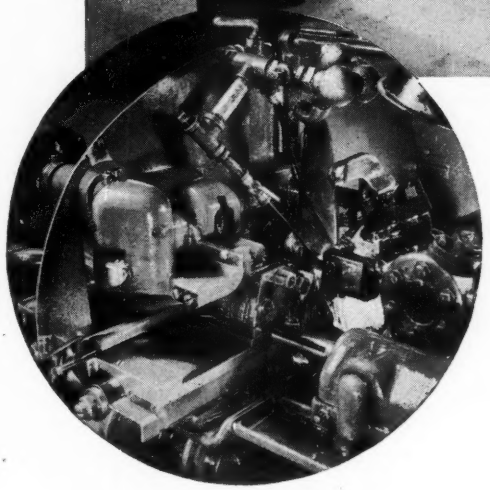
(1) Total will be at least this much. (2) Maximum when blast furnace coke is produced; figure is lower when foundry coke is produced.

(*Please Turn to Page* 152)

"Longer tool life, Fewer rejects

with GULF STAINLESS CUTTING OIL"





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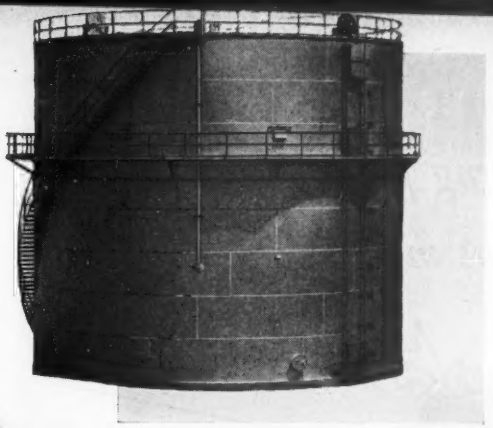
Pittsburgh 30, Pa.

GULF SERVES INDUSTRY

(Please Turn to Page 152)

	CAPACITY July 1, 1952 Stacks—Capacity annually, net tons	CAPACITY Jan. 1, 1953 Stacks—Capacity annually, net tons	EXPANSION UNDERWAY OR PLANNED Stacks—Capacity annually, net tons	Completion Date	TOTAL Anticipated Annual Capacity, net tons
Alan Wood Steel Co.					
Swedeland, Pa.	2— 454,800	2— 454,800	.. ..	.....	454,800
Armco Steel Corp. (Total)	6— 1,641,000	7— 2,145,000	.. 564,000	.....	2,205,000
Ashland, Ky.	3— 777,000	3— 777,000	.. ..	.....	777,000
Hamilton, O.	2— 564,000	2— 564,000	.. ..	.....	564,000
Middletown, O.	.. ..	1— 504,000	1— 504,000	12/52	504,000
Sheffield Steel Corp.					
Houston, Tex.	1— 300,000	1— 300,000	1[1]— 60,000	7/1/53	360,000
Barium Steel Corp.					
Chester Blast Furnace					
Chester, Pa.	1— 200,000	1— 200,000	.. ..	.....	200,000
Bethlehem Steel Corp.: (Total)	32—11,000,000	32—11,000,000[3]	.. ..	.....	11,600,000[3]
Sparrows Point, Md.	8— 3,252,000	.. ..	1— 600,000	1953	.....
Lackawanna, N. Y.	7— 3,0?2,000	.. ..	.. ..	.....	.....
Bethlehem, Pa.	7— 2,160,000	.. ..	.. ..	.....	.....
Johnstown, Pa.	7— 1,674,000	.. ..	.. ..	.....	.....
Steelton, Pa.	3— 842,000	.. ..	.. ..	.....	.....
Colorado Fuel & Iron Corp.: (Total)	7— 1,459,200	7— 1,459,200	.. ..	.....	1,459,200
Pueblo, Colo.	4— 918,000	4— 918,000	.. ..	.....	918,000
Tonawanda, N. Y.	2— 390,000	2— 390,000	.. ..	.....	390,000
Brooke Iron Div. (E. & G.)					
Birdsboro, Pa.	1— 151,200	1— 151,200	.. ..	.....	151,200
Crucible Steel Co.					
Midland, Pa.	2— 535,000	3— 895,000	1— 360,000	4thQ.'52	895,000
Delaware River Steel Corp.					
New Castle County, Del.	.. ..	.. ..	1— 430,000	.....	430,000
Detroit Steel Corp.					
Portsmouth, O.	1— 264,000	1— 264,000	1— 504,000	1stQ.'53	768,000
Eastern Gas & Fuel Associates					
Everett, Mass	1— 196,000	1— 196,000	.. ..	.....	196,000
Ford Motor Co.					
Dearborn, Mich.	3— 1,102,627	3— 1,102,627	.. 126,373[2]	mid-1953	1,229,000
Globe Iron Co.					
Jackson, O.	1— 100,000	1— 100,000	.. ..	.....	100,000
Granite City Steel Co.					
Granite City, Ill.	2— 449,680	2— 449,680	.. ..	.....	449,680
Inland Steel Co.					
Indiana Harbor, Ind.	8— 2,638,950	8— 2,638,950	.. ..	.....	2,638,950
Interlake Iron Corp.: (Total)	6— 1,298,270	6— 1,409,990	.. 249,610	.....	1,547,880
Chicago, Ill.	2— 448,020	2— 448,020	1[1]— 137,890	6/53	585,910
Duluth, Minn.	1— 131,670	1— 131,670	.. ..	.....	131,670
Toledo, O.	2— 551,000	2— 551,000	.. ..	.....	551,000
Erie, Pa.	1— 167,580	1— 279,300	1[1]— 111,720	12/52	279,300
International Harvester Co.					
South Chicago, Ill.	3— 754,389	3— 754,389	.. ..	.....	754,389
Jackson Iron & Steel Co.					
Jackson, O.	1— 93,000	1— 93,000	1[1]— 9,300	early '53	102,300
Jones & Laughlin Steel Corp.: (Total)	13— 4,312,000[3]	13— 4,312,000[3]	.. ..	.....	4,312,000[3]
Cleveland, O.	2— 640,000	2— 640,000	.. ..	.....	.....
Aliquippa, Pa.	5— 1,800,000	5— 1,800,000	.. ..	.....	.....
Pittsburgh, Pa.	6— 1,872,000	6— 1,872,000	.. ..	.....	.....
Kaiser Steel Corp.					
Fontana, Calif.	2— 876,000	2— 876,000	1— 438,000	4/1/53	1,314,000
Lavino & Co., E. J. (Total)	2— 112,000	2— 112,000	.. ..	.....	112,000
Sheridan, Pa.	1— 56,000	1— 56,000	.. ..	.....	56,000
Lynchburg, Va.	1— 56,000	1— 56,000	.. ..	.....	56,000
Lone Star Steel Co.					
Lone Star, Tex.	1— 366,600	1— 366,600	.. ..	.....	366,600
Michigan Iron & Coke Co.					
St. Clair, Mich.	.. ..	.. ..	1— 300,000	2/54	300,000
National Steel Corp.: (Total)	10— 3,240,000	12— 4,200,000	.. ..	.....	4,200,000
Great Lakes Steel Corp.					
Ecorse, Mich.	3— 1,200,000	4— 1,680,000	.. ..	.....	1,680,000
Hanna Furnace Corp.					
Buffalo, N. Y.	4— 800,000	4— 800,000	.. ..	.....	800,000
Weirton Steel Co.					
Weirton, W. Va.	3— 1,240,000	4 — 1,720,000	.. ..	.....	1,720,000
New Jersey Zinc Co.					
Palmerton, Pa.	2— 112,000	2— 112,000	.. ..	.....	112,000
Newport Steel Corp.					
Martins Ferry, O.	1— 136,800	1— 136,800	.. ..	.....	136,800
North American Steel Co.					
Camanche, Iowa	.. ..	.. ..	2—1,000,000	.....	1,000,000
Pittsburgh Coke & Chemical (Total)	2— 414,100	3— 765,700	.. ..	.....	765,700
Struthers, O.	1— 182,500	1— 182,500	.. ..	.....	182,500
Neville Island, Pa.	1— 291,600	2— 583,200	1— 291,600	Dec., '52	583,200
Pittsburgh Steel Co.					
Monessen, Pa.	3— 954,000	3— 954,000	.. ..	.....	954,000
Republic Steel Corp.: (Total)	22— 7,242,000	22— 7,277,000	.. ..	.....	7,277,000
Birmingham, Ala.	2— 456,000	2	.. ..	.....	.....
Gadsden, Ala.	2— 471,000	2	.. ..	.....	.....
South Chicago, Ill.	1— 450,000	1	1[1]— 27,000	4thQ.'52	.....
Buffalo, N. Y.	2— 618,000	2	.. ..	.....	.....
Troy, N. Y.	1— 263,000	1	.. ..	.....	.....
Canton, O.	1— 23?,000	1	.. ..	.....	.....
Cleveland, O.	6— 2,2?2,000	6	.. ..	.....	.....
Massillon, O.	1— 238,000	1	.. ..	.....	.....
Warren, O.	1— 516,000	1	.. ..	.....	.....
Youngstown, O.	5— 1,723,000	5	.. ..	.....	.....
Sharon Steel Corp. (Total)	3— 709,620	3— 709,620	.. ..	.....	709,620
Lowellville, O.	1— 148,620	1— 148,620	.. ..	.....	148,620
Farrell, Pa.	2— 561,000	2— 561,000	.. ..	.....	561,000
Shenango Furnace Co.					
Sharpsville, Pa.	2— 417,300	2— 417,300	.. ..	.....	417,300
Sloss-Sheffield Steel & Iron (Total)	4— 491,710	4— 491,710	.. ..	.....	491,710
Birmingham, Ala.	2— 281,230	2— 281,230	.. ..	.....	281,230
North Birmingham, Ala.	2— 210,480	2— 210,480	.. ..	.....	210,480
Tennessee Prod. & Chem. (Total)	3— 241,920	3— 241,920	.. ..	.....	241,920
Lyles-Wrigley, Tenn.	1— 40,320	1— 40,320	.. ..	.....	40,320
Rockwood, Tenn.	2— 201,600	2— 201,600	.. ..	.....	201,600
Tonawanda Iron Division (American Radiator & Standard Sanitary Corp.)					
North Tonawanda, N. Y.	1— 170,000	1— 170,000	.. ..	.....	170,000
United States Steel Corp. (Total)	82—26,600,300	84—27,734,300[3]	.. ..	.....	28,137,100[3]
American Steel & Wire Div. (Total)	6— 1,429,400	.. ..	.. ..	.....	.....
Duluth, Minn.	2— 449,400	.. ..	.. ..	.....	.....
Cleveland, O.	2— 530,000	.. ..	.. ..	.....	.....
Donora, Pa.	2— 450,000	.. ..	.. ..	.....	.....
Columbia-Geneva Steel: (Total)	5— 1,652,700	.. ..	.. ..	.....	.....
Geneva, Utah	3— 1,200,000	.. ..	.. ..	.....	.....
Ironton, Utah	2— 482,700	.. ..	.. ..	.....	.....
National Tube (Total)	9— 3,122,800	.. ..	.. ..	.....	.....
Lorain, O.	5— 1,842,500	.. ..	.. ..	.....	.....
McKeesport, Pa.	4— 1,280,300	.. ..	.. ..	.....	.....
Tennessee Coal & Iron: (Total)	9— 2,497,500	.. ..	.. ..	.....	.....
Fairfield, Ala.	3— 1,015,700	.. ..	.. 402,800[4]	1953	.....
Ensley, Ala.	6— 1,481,800	.. ..	.. ..	.....	.....
United States Steel Co.: (Total)	53—17,867,900	.. ..	.. ..	.....	.....
South Chicago, Ill.	11— 4,196,700	.. ..	.. ..	.....	.....
Gary, Indiana	12— 4,721,400	.. ..	.. ..	.....	.....
Youngstown, O.	6— 2,003,700	.. ..	.. ..	.....	.....
Braddock, Pa.	7— 2,602,700	.. ..	.. ..	.....	.....
Clairton, Pa.	3— 614,000	.. ..	.. ..	.....	.....
Duquesne, Pa.	6— 1,451,400	.. ..	.. ..	.....	.....
Etna, Pa.	2— 145,000	.. ..	.. ..	.....	.....
Morrisville, Pa.	.. ..	.. ..	2—1,134,000	4th qtr. 1952	.....
Rankin, Pa.	6— 2,133,000	.. ..	.. ..	.....	.....
Wheeling Steel Corp. (Total)	6— 1,678,500	6— 1,678,500	.. ..	.....	1,678,500
Steubenville, O.	5— 1,444,500	5— 1,444,500	.. ..	.....	1,444,500
Benwood, W. Va.	1— 234,000	1— 234,000	.. ..	.....	234,000
Woodward Iron Co.					
Woodward, Ala.	4— 772,632	4— 772,632	.. ..	.....	772,632
Yolo Steel & Metal Co.					
Sacramento, Calif.	.. ..	.. ..	1	.....	.....
Youngstown Sheet & Tube (Total)	12— 3,616,000	13— 4,200,000	.. ..	.....	4,200,000
South Chicago, Ill.	3— 684,000	3— 684,000	.. ..	.....	684,000
Indiana Harbor, Ind.	2— 779,200	3— 1,363,200	1— 584,000	Fall 1952	1,363,200
Campbell, O.	4— 1,450,800	4— 1,450,800	.. ..	.....	1,450,800
Hubbard, O.	1— 200,400	1— 200,400	.. ..	.....	200,400
Youngstown, O.	2— 501,600	2— 501,600	.. ..	.....	501,600
Grand Total	251—74,710,398	259—78,990,718	.. 7,020,683	.....	82,699,081

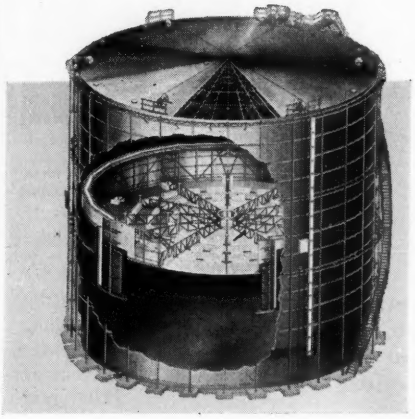
(1) Furnace enlargements. (2) Increase stemming from new sintering plant. (3) Estimated by STEEL. (4) Richer ore to be used.

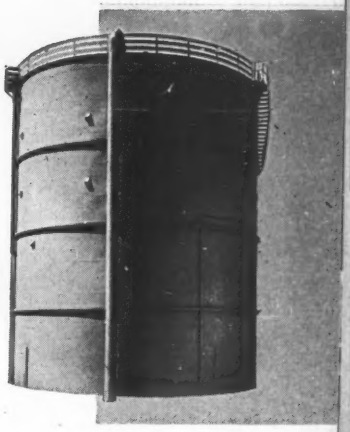


SIMPLICITY

EFFICIENCY

ECONOMY





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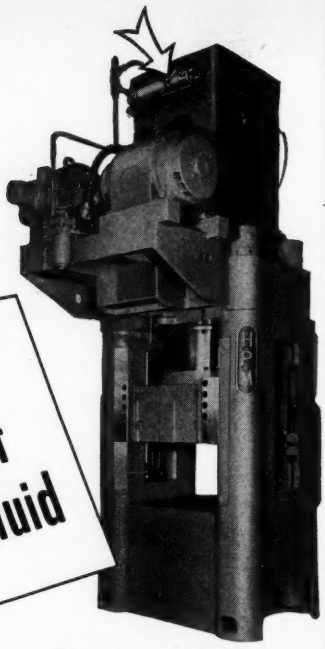

H-P-M 600-ton press used in farm machinery manufacturing. Equipped with Ross Type BCF Exchanger

here, H-P-M uses Ross Exchangers to prevent overheated hydraulic fluid

H-P-M 2500-ton armor plate quenching press equipped with Ross Type BCF Exchanger

A press that demonstrated a better way to convert apples to cider was the bedrock on which The Hydraulic Press Mfg. Co. was founded. That was 75 years ago. Today hydraulic presses serving practically every pressure processing application are routine projects of this versatile company.

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Steel Capacity Expansions
(After Jan. 1, 1953)

CARPENTER STEEL CO., Reading, Pa., will get an additional 8580 net tons yearly through enlargement of electric furnace capacity.

COLORADO FUEL & IRON CORP. will get an additional 44,285 net tons of capacity in the first quarter of 1953 through enlargement of five open hearths at Claymont, Del.

DETROIT STEEL CORP., Portsmouth, O., will get an additional 630,000 net tons of capacity in the second quarter of 1953 from four new open hearths.

EMPIRE STEEL CO., Mansfield, O., will get an additional 9680 net tons of capacity in the first quarter of 1953 through enlargement of one open hearth.

FORD MOTOR CO., Dearborn, Mich., will increase capacity 155,000 net tons yearly in early 1953 through conversion of one open hearth from tilting to stationary.

GRANITE CITY STEEL CO., Granite City, Ill., will get an additional 580,000 net tons of capacity yearly from three new open hearths to come into operation in April and May, 1953.

GREAT LAKES STEEL CORP., Ecorse, Mich., will get 350,000 additional net tons of capacity in 1953 through enlargement of open hearths.

GREEN RIVER STEEL CORP., Owensboro, Ky., will get 200,000 tons of yearly capacity from two new electric furnaces to come into operation in January, 1953.

KAISER STEEL CORP., Fontana, Calif., will increase annual capacity 180,000 net tons through one new open hearth to go into operation Mar. 1, 1953.

NEWPORT STEEL CORP., Newport, Ky., will get an additional 144,000 net tons of yearly capacity in 1953 through one new electric furnace and conversion of an existing electric furnace.

PITTSBURGH STEEL CO., Monessen, Pa., will get an additional 168,000 net tons of capacity June 1, 1953, through enlargement of one open hearth.

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OVER ONE HUNDRED YEARS OF CONTINUOUS SERVICE. ROUNDS, SQUARES, FLATS, HEXAGONS, OCTAGONS

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WL introduces *"Whelco"* – a new tool steel of M grade – a new steel of maximum toughness, hardness and strength – a steel to assure maximum results at low cost! *"Whelco"* offers great penetration of hardness, great toughness at high hardness, wide hardening range, fine grain structure, and desirable non-deforming characteristics. *"Whelco"* has good forging properties and is readily machinable in the annealed condition. All **WL** warehouses stock *"Whelco"* M tool steel in a wide variety of flats and squares. Call your nearest **WL** man for a trial order – the results will speak for themselves!

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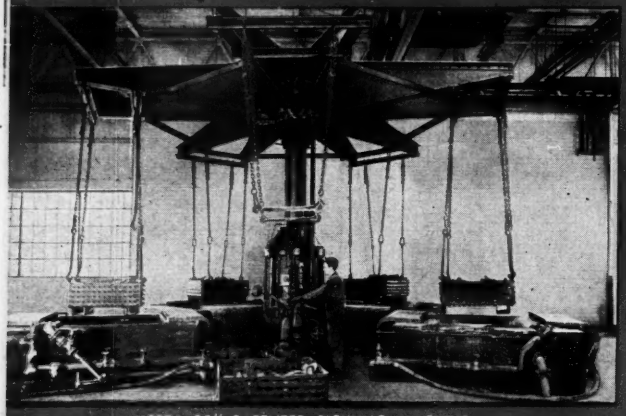
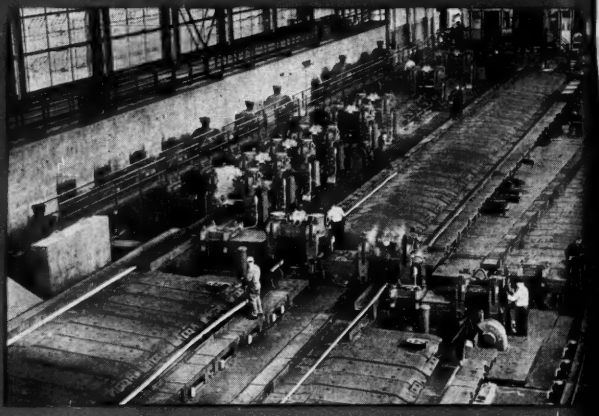
BILLETS AND FORGINGS FOR PRODUCTION, TOOL ROOM AND MAINTENANCE REQUIREMENTS

MESTA 56" FOUR-HIGH, FIVE-STAND TANDEM HIGH-SPEED COLD MILL

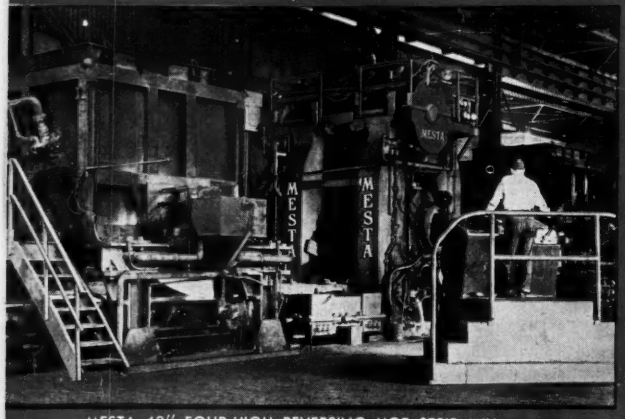
PAIR OF MESTA HOUSINGS FOR COLD ROLLING MILL LOADED FOR SHI



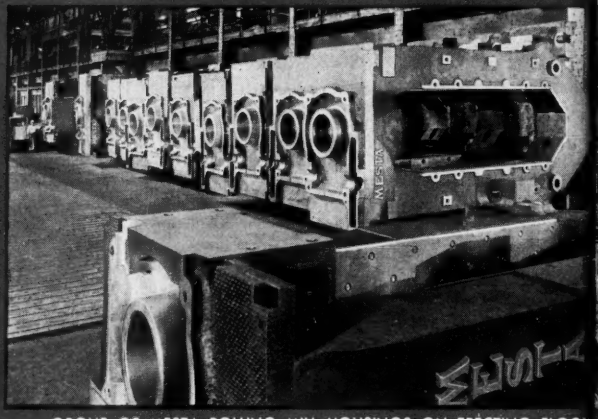
MESTA 32" PATENTED PICKLING MACHINE



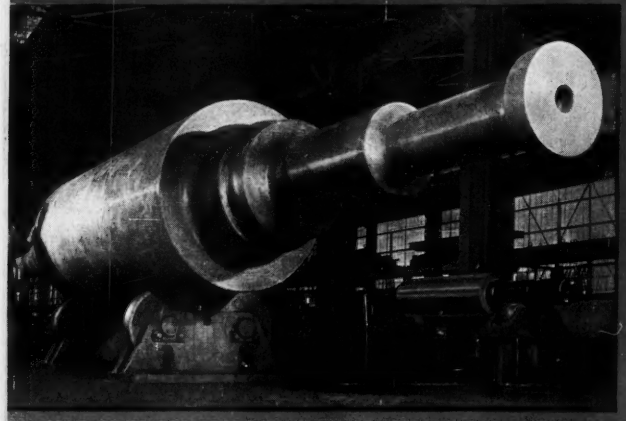
MESTA MERCHANT MILL WITH PACK ANNEALING COOLING BED AND EQUIP



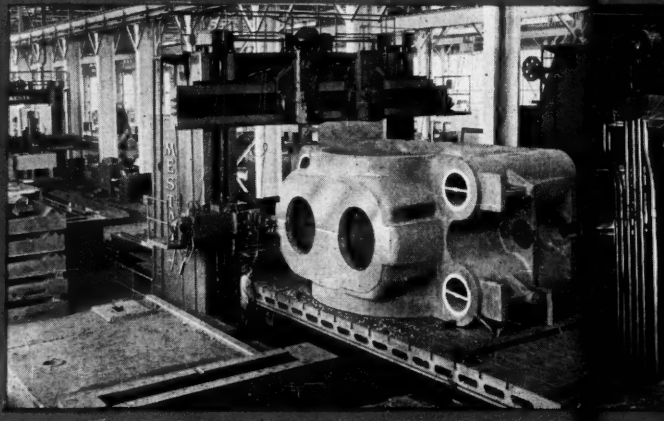
MESTA 42" FOUR-HIGH REVERSING HOT STRIP MILL



GROUP OF MESTA ROLLING MILL HOUSINGS ON ERECTING FLOO



MASSIVE GENERATOR ROTOR SHAFT FORGED FROM INGOT POURED IN THE MESTA OPEN HEARTH DEPARTMENT



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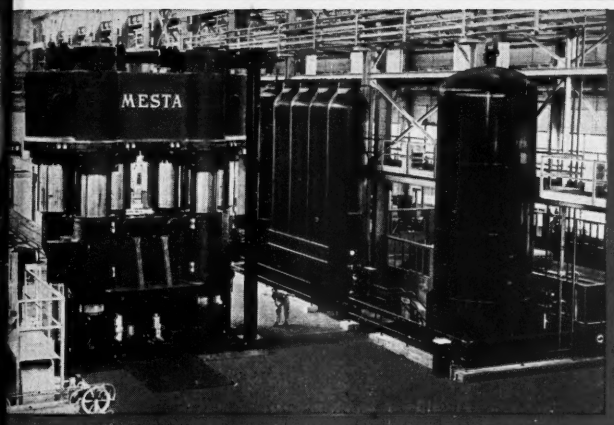
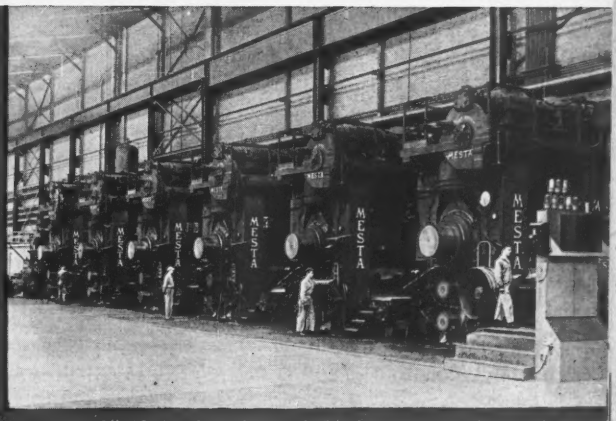
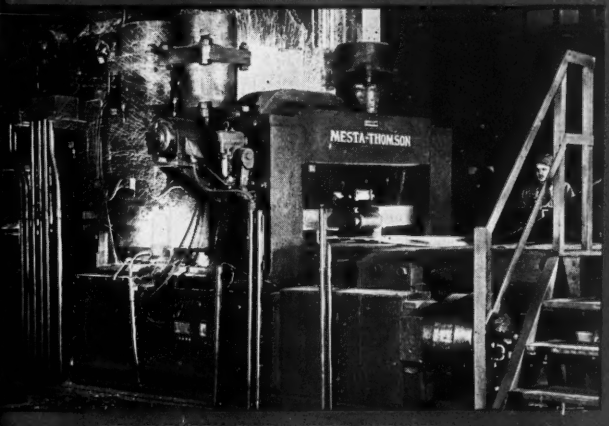
MACHINE COMPANY
PITTSBURGH, PA.



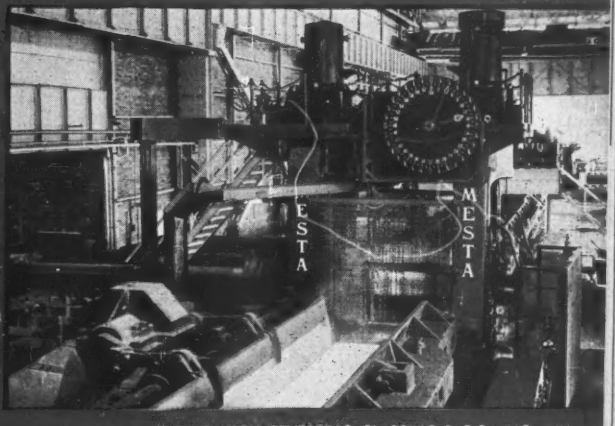
MESTA 18,000 TON HYDRAULIC DIE-FORGING PRESS



MESTA 68" FOUR-HIGH CONTINUOUS HOT STRIP MILL FINISHING STAND



MESTA-THOMSON FLASH WELDER INSTALLED IN
A MESTA HIGH-SPEED CONTINUOUS PICKLING LINE



MESTA 46" TWO-HIGH REVERSING SLABBING-BLOOMING MILL
WITH MANIPULATORS AND TABLES

ANOTHER CREDITABLE ASSIST

by ATLAS

to dependable

BLAST FURNACE OPERATION

40-TON

bottom-dump SCALE CAR

This scale car is employed in one of the country's newest blast furnace operations. The car has anti-friction bearings throughout. Up-to-date features include a foot operated "Dead Man" control with air brakes interlocked to apply automatically. The car is equipped with ATLAS all-steel scales and a 30" indicating dial. A type-printing recorder attachment provides automatic weight registration at skip pit. All standard safety features are provided, including red marker lights and illumination for the front of the bin.

ATLAS ALSO SUPPLIED:

COKE WEIGHING SCALES: ORE TRANSFERS: AND COKE QUENCHERS.

THE ATLAS CAR & MFG. CO.

ENGINEERS MANUFACTURERS

1140 IVANHOE RD. CLEVELAND 10, OHIO, U. S. A.

STEEL CAPACITY EXPANSIONS

ING MILL CORP., Seattle, Wash., will get 150,000 net tons of capacity annually in 1954 through one new electric furnace.

SOUTHWEST STEEL ROLLING MILLS, Los Angeles, will increase its electric furnace steelmaking capacity 60,000 net tons a year in first quarter of 1953.

TENNESSEE STEEL CORP., Oneida, Tenn., will get a yearly capacity of 227,525 net tons from three electric furnaces in December, 1953.

U. S. STEEL CO., will get an annual capacity of 1.8 million net tons of open-hearth steel at its new Fairless Works, Morrisville, Pa., part of the capacity coming in during the fourth quarter of 1952 and the rest in early 1953.

New Rolling Mills
(Installed since Jan., 1, 1952, or yet to be installed)

ARMCO STEEL CORP., Ashland, Ky., 100-in. slabbing mill and 10-stand hot strip mill, December, 1952.

CARPENTER STEEL CO., Reading, Pa., hot bar mill, December, 1952.

COLONIAL STEEL CO., Monaca, Pa., 22-in. bar mill, Nov. 1, 1952.

COLORADO FUEL & IRON CORP., Pueblo, Colo., tube mill, June, 1953.

CONNORS STEEL CO., Birmingham, 18-in. mill, July, 1952.

CONTINENTAL STEEL CORP., Kokomo, Ind., continuous wire rod mill, first quarter, 1953.

DETROIT STEEL CORP., Portsmouth, O., 54-in. hot strip mill, third quarter, 1952; 54-in. cold sheet mill, fourth quarter, 1952; and 48-in. high lift bloomer, second quarter, 1953.

EMPIRE STEEL CORP., Mansfield, O., 42-in. hot strip mill, August, 1952. Mill on which sheet bars were rolled will be dismantled; by November, 1952, Empire will have abandoned sheet bar business.

FORD MOTOR CO., Dearborn, Mich., blooming mill alterations to handle slabs to 60 inches in width; 66-in. tandem cold reduction mill altered to handle coils to 50,000 pounds (30,000 pounds was former limit); delivery end of 84-in. tem-

"THIS IS WHAT HAPPENS TO GOOD LITTLE PIGS!"

PRINCESS WENATCHEE: You mean *Electro-Silvery* pigs!

CHIEF KEOKUK: Yes indeed! Those good little pigs end up helping to make important products like this farm tractor . . .

PRINCESS WENATCHEE: . . . and countless other products like tanks and automobiles . . .

CHIEF KEOKUK JR: Hey, Pop—what *is* Electro-Silvery?

CHIEF KEOKUK: Electro-Silvery, son, is a form of ferro-silicon that acts as a vital control element in the production of iron and steel . . .

PRINCESS WENATCHEE: . . . and the largest producer in the world of this vital ingredient is Keokuk Electro-Metals Company .

Keokuk Electro-Silvery is used by foundries and steel plants in the form of these three pigs, weighing 60 pounds . . . 30 pounds . . . and 12½ pounds.

KEOKUK

ELECTRO-METALS COMPANY

KEOKUK, IOWA
WENATCHEE DIVISION: WENATCHEE, WASHINGTON

SALES AGENTS: MILLER AND COMPANY

332 S. Michigan Ave., Chicago 4, Illinois
3504 Carew Tower, Cincinnati 2, Ohio
915 Olive St., St. Louis 1, Missouri

Headquarters for

52100

Steel Tubing and Bars

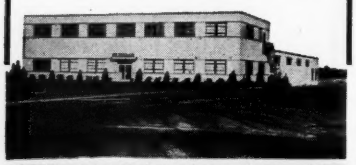
Largest Stocks in the Country..

of this versatile steel. 52100 is hard, tough and long-wearing, yet it's easy to machine and is right for bearings, sleeves, pins, collars and many other machine parts.

Over 200 seamless tube sizes to choose from .898" O. D. to 8.250" O. D. Bar sizes from .171" round to 7.5" round. Also ring forgings in any analysis.

Write for our Latest Stock List Now

New Headquarters of Peterson Steels, Inc. Union, New Jersey



PETERSON STEELS, INC.

DEPT. S, SPRINGFIELD ROAD
UNION, NEW JERSEY

Detroit, Mich. • Chicago, Ill.

NEW ROLLING MILLS

per mill altered to handle bigger coils.

GRANITE CITY STEEL CO., Granite City, Ill., 46-in. blooming mill, Jan. 1, 1953, and 4-high reversing mill, April, 1953.

GREEN RIVER STEEL CORP., Owensboro, Ky., blooming and bar mill, January, 1953.

KAISER STEEL CORP., Fontana, Calif., 44-in. 5-stand 4-high cold reduction mill, and 44-in. 4-high temper pass mill, May, 1952.

KEYSTONE STEEL & WIRE CO., Peoria, Ill., 3-stand 21-in. billet mill, Dec. 1, 1952.

LATROBE STEEL CO., Latrobe, Pa., 12-in. bar mill, Dec. 1, 1952.

R. G. LeTOURNEAU INC., Longview, Tex., 144-in. plate mill, Oct. 1, 1952.

LONE STAR STEEL CO., Lone Star, Tex., blooming and slabbing mill and hot strip mill, March, 1953.

NEWPORT STEEL CORP., Wilder, Ky., 3-stand tandem cold mill, 1954.

NORTHWESTERN STEEL & WIRE CO., Sterling, Ill., 46-in. blooming and slabbing mill, October, 1952.

PITTSBURGH STEEL CO., Allenport, Pa., 66-in. 4-high hot sheet and strip mill, May 1, 1953, and 4-stand tandem cold sheet and strip mill, July 1, 1953.

REPUBLIC STEEL CORP., Cleveland, 72-in. cold reducing tandem mill, 1952.

J. A. ROEBLING'S SONS CO., Roebling, N. J., 2-strand Morgan continuous rod mill to be converted to 3-strand by Oct. 1, 1952.

SEIDELHUBER STEEL ROLLING MILL CORP., Seattle, bar mill, fourth quarter, 1952.

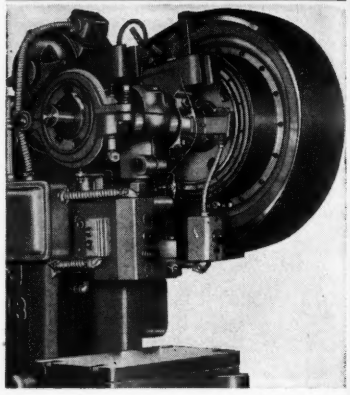
SHEFFIELD STEEL CORP., Kansas City, Mo., 32-in. 2-high reversing blooming mill, late 1953.

TENNESSEE STEEL CORP., Oneida, Tenn., strip, skelp, pipe, bar and rerolling mills, December, 1953.

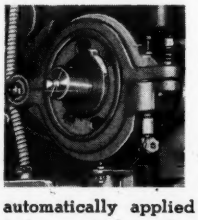
WEST VIRGINIA STEEL & MFG. CO., Huntington, W. Va., 28-in. blooming mill, Nov. 1, 1952.

YOUNGSTOWN SHEET & TUBE CO., Indiana Harbor, Ind., blooming mill, July, 1953, and continuous cold strip mill, April, 1954.

MORE Speed – Safety Production with L & J - FAWICK AIR CLUTCHES



Here's the answer to more production — L & J Presses equipped with L&J-Fawick Air Clutches and variable speed drives. This unbeatable combination gives you maximum speed for each operation — often 2-1/2 to 3 times normal production, greater safety through rapid, shock-free, full-power operation. Let us show you how these L & J Presses can increase your output of high-speed press work and cut down operating cost.



NEW

AIR RELEASE SPRING-SET BRAKE

Another important L&J safety feature. Brake automatically applied if air pressure fails — positive, foolproof.

L&J Presses are made in 12 O. B. I. models—back geared and plain flywheel types—8 sizes from 6 to 80 ton capacities. *Write for literature.*

L&J PRESS CORPORATION

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ELKHART, INDIANA

Announcing

OUR NEW PLANT
and more

BAKER'S MAGDOLITE

The J. E. Baker Company
takes pride in announcing
the completion of its new plant in
York, Pennsylvania.
This operation supplements
our other plants in
Eastern Pennsylvania and Ohio.
We are now able to assure
the kind of dependable shipments of
deadburned dolomite
that the steel industry has needed,
and to a larger area.

ONE always stands out...
BAKER'S MAGDOLITE

ALWAYS 5 WAYS BETTER—

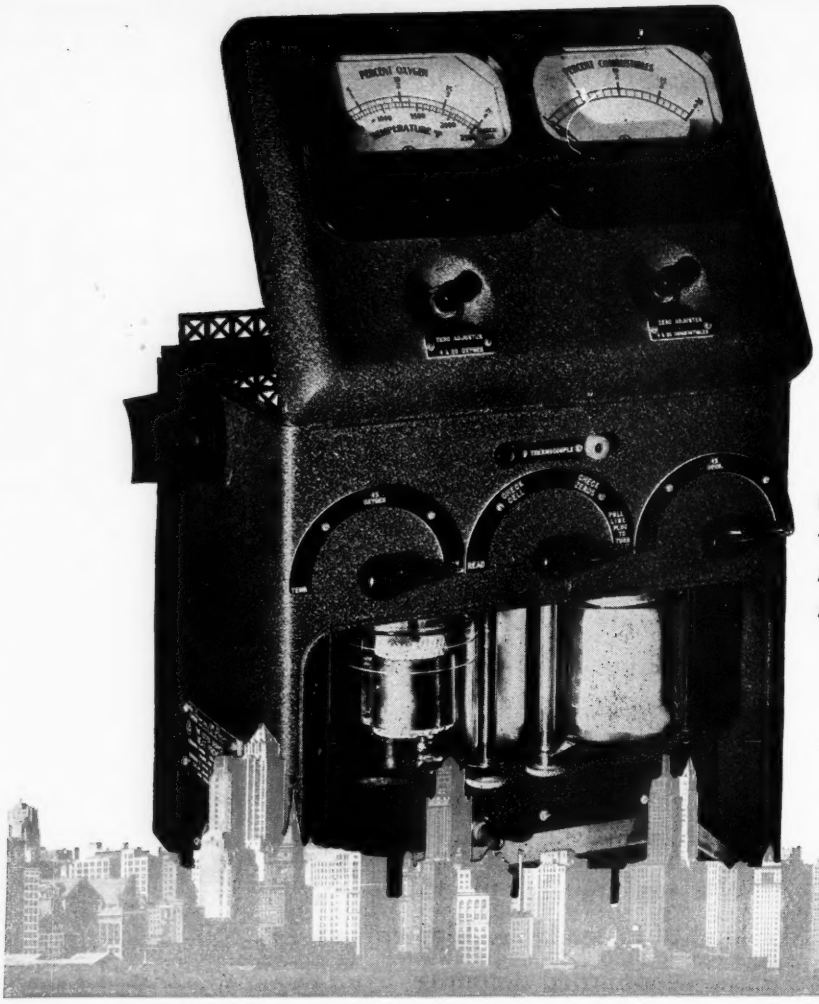
Composition • Preparation • Strength • Economy • Quality

JEBCO PRODUCTS SINCE 1889

THE J.E.BAKER COMPANY

YORK, PENNSYLVANIA

PLANTS—York, Pennsylvania • Millersville, Ohio



FROM THE TOP STEEL PRODUCER . . .

TO A LEADING CHEMICAL HOUSE,

A YEAST COMPANY

AND A MEAT PACKER . . .

Heat Prover SERVES 62 DIFFERENT COMPANIES IN THE GREAT CHICAGO INDUSTRIAL AREA!

The Cities Service Heat Prover is graphically proving its worth to all kinds of industry in the Chicago area and elsewhere throughout the country.

62 different companies, producing everything from steel to beef, have found the Heat Prover an important aid to increased production and big dollar economy.

WHEREVER A FURNACE OPERATION IS INVOLVED, Heat Prover can help increase productivity by providing:

1. **Rapid, continuous sampling.**
2. **Simultaneous reading of oxygen and combustibles.**
3. **Direct measurement of oxygen and combustibles.**
4. **Easy portability.**
5. **No maintenance; no re-calibration.**

REMEMBER: Heat Prover is not an instrument you buy but a service we supply. Contact the Cities Service office in your area and learn how Heat Prover can serve you . . . or write CITIES SERVICE OIL COMPANY, Dept. I-21, Sixty Wall Tower, New York City 5.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

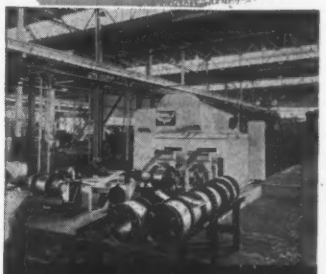
EXHIBITORS

Company Name	Booth No.
Adalet Mfg. Co., Cleveland	73
Air Reduction Sales Co., New York	138
Ajax Flexible Coupling Co. Inc., Westfield, N. Y.	101
Alemite Div., Stewart-Warner Corp., Chicago	115
Allen-Bradley Co., Milwaukee	292
Allis Co., Louis, Milwaukee	488
Allis-Chalmers Mfg. Co., Milwaukee	35
American Air Filter Co. Inc., Louisville	430
American Brake Shoe Co., New York	211
American Car & Foundry Co., New York	470
American Flexible Coupling Co., Erie, Pa.	426
American Society for Metals, Cleveland	151
American Wheelabrator & Equipment Corp., Mishawaka, Ind.	91
Americana Corp.	475
Ampco Metal Inc., Milwaukee	32
Amsler Morton Corp., Pittsburgh	149
Anthony Co., F. M.	458
Appleton Electric Co., Chicago	300
Askania Regulator Co., Chicago	242
Atlas Mineral Products Co., Mertztown, Pa.	432
Automatic Transportation Co., Chicago	38
Bailey Meter Co., Cleveland	53
Bantam Bearings Div., Torrington Co., South Bend, Ind.	290
Bearing Service Co., Pittsburgh	320
Blaw-Knox Co., Pittsburgh	276
Bliss Co., E. W., Detroit	64
Bloom Engineering Co. Inc., Pittsburgh	83
Brad Foote Gear Works, Cicero, Ill.	480
Bulldog Electric Products Co., Detroit	439
Burr Inc. H. G.	444
C & D Batteries Inc., Conshohocken, Pa.	469
Cardox Corp., Chicago	20
Centrifix Corp., Cleveland	465
Chemsteel Construction Co. Inc., Pittsburgh	425
Cities Service Petroleum Inc., New York	448
Clark Controller Co., Cleveland	68
Cleveland Crane & Engineering Co., Wickliffe, O.	248
Cleveland Worm & Gear Co., Cleveland	244
Coast Metals Inc., Canton, O.	473
Complete-Reading Electric Co. Inc.	459
Corhart Refractories Co. Inc., Louisville	93
Crouse-Hinds Co., Syracuse, N. Y.	340
Cunningham Co., M. E., Pittsburgh	81
Cuno Engineering Corp., Meriden, Conn.	127
Cutler-Hammer Inc., Milwaukee	46
De Laval Separator Co., Trenton, N. J.	332
Delta-Star Electric Co., Chicago	18
Dowell Inc., Tulsa, Okla.	270
Dravo Corp., Pittsburgh	230
Edison Storage Battery Div., Thomas A. Edison Inc., W. Orange N. J.	223
Electric Controller & Mfg. Co., Cleveland	134
Electric Furnace Co., Salem, O.	126
Electric Products Co., Cleveland	22
Electric Service Mfg. Co., Philadelphia	123
Electric Storage Battery Co., Philadelphia	128
Elliott Co., Jeannette, Pa.	295
Elwell Co., R. A.	447
Elwell-Parker Electric Co., Cleveland	408
Factory Stores Co., Cleveland	336
Farmers Engineering & Mfg. Co., Pittsburgh	335
Farval Corp., Cleveland	244

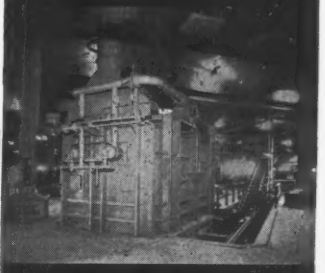
The over-all job in

Production Lines and Special Automatic Machines by CONTINENTAL

for military production . . .

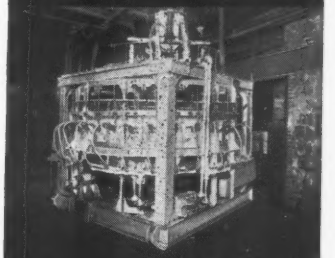


Continental Automatic Strip Production Line consisting of annealer, pickling machine, dryer, and coiler.



Continental Special Automatic Pig Molding Machine complete with automatic charging, melting, and pouring.

Continental Automatic Production Line operating from raw materials to completely finished and packed product. This production line consists of fifteen integrated, synchronized, special automatic machines.



Continental Special Automatic Glazing Machine complete with automatic press synchronizer and fire polisher.

For maximum production of military items manual operations must be eliminated. With CONTINENTAL Special Automatic Machines and Integrated Production Lines production goes on in a continuous flow with better, more uniform products with a minimum of man hours.

CONTINENTAL jobs begin with analysis of the requirements, then the selection and development of proper methods for greatest results. Finally follows the design, the building, and the installation of the machines—delivering a COMPLETE UNITIZED PRODUCING PACKAGE with results guaranteed.

The broad experience of CONTINENTAL offers you a prompt, sure solution to your change-over program.

CONTINENTAL INDUSTRIAL ENGINEERS, INC.
176 W. Adams Street, Chicago 3, Illinois
District Representatives:
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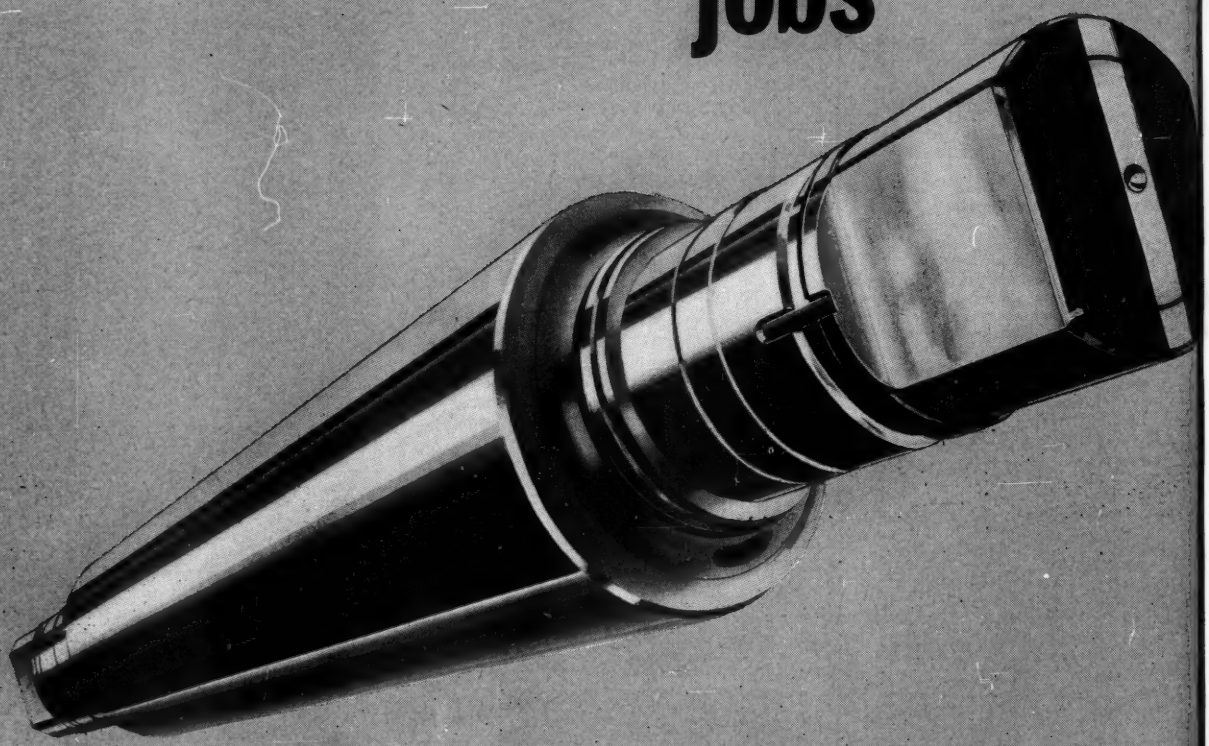
PLANNED MILITARY PRODUCTION. Write for Booklet No. 127.

FURNACES
PRODUCTION LINES
CONTINENTAL
SPECIAL MACHINES
COMPLETE PLANTS

MANUFACTURERS—ENGINEERS—CONTRACTORS FOR OVER A QUARTER OF A CENTURY

for your rolling mill jobs



there are MACK-HEMP ROLLS

developed to do them best

How?

Because *your* roll designers and mill operators have helped Mack-Hemp metallurgists in the development of our rolls, the rolls *with the striped red wabblers* turn in excellent production records.

For example, application of Mack-Hemp rolls in intermediate stands on high speed strip mills reduce costly down-time, because Mack-Hemp rolls stay in the mill longer without redressing.

Because we are working constantly to improve the rolls *with the striped red wabblers,* it's wise to keep your eye on what's new at Mack-Hemp.

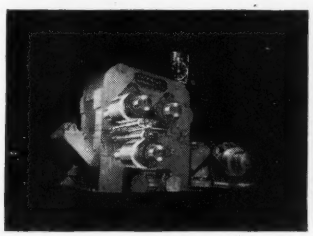
1952...

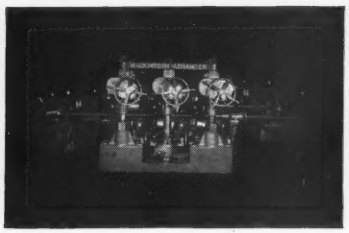
Mack-Hemp's one hundred fiftieth year of continuous product improvement

MACKINTOSH-HEMPHILL CO.

PITTSBURGH AND MIDLAND, PA.

Makers of the Rolls with the Striped Red Wabblers





Mack-Hemp makes modern equipment for steel mills:

Y-MILLS

Modern Mack-Hemp Y-Mill is the reversing cold strip mill which combines the advantages of small diameter rolls, power for high speed and deep draft in a compact, simple arrangement.

ROTARY STRAIGHTENERS

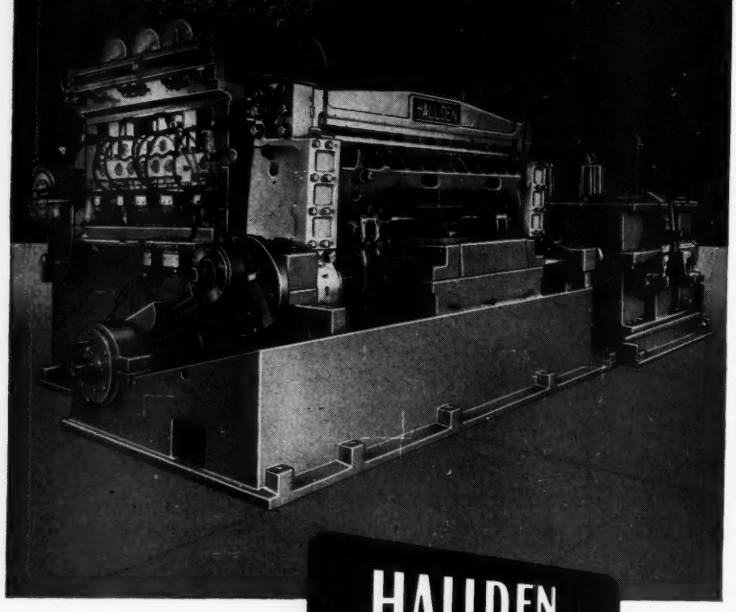
Mack-Hemp Rotary Straighteners straighten end-to-end to precision tolerances, and finish with no guide marks or scoring. They cut costs and insure quality of straightened product.

JOHNSTON CINDER POTS

Johnston Patented Cinder Pots are designed to fit your plant requirements. From small units for electric furnace use to giant thimbles for blast furnace and open hearth, Johnston Cinder Pots provide dependable slag disposal service.

Because Mack-Hemp engineers keep pace with modern steel mill practice, it's wise to keep your eye on what's new at Mack-Hemp.

SHEAR EFFICIENCY



HALLDEN *Automatic Shears*

Hallden Machines are designed to give modern steel mills maximum efficiency in flattening and cutting off operations. They permit continuous feed of metal through the machine at accelerated speeds while maintaining precision cutting accuracy. Low center of gravity, rugged construction and compactness assure uninterrupted operation. Remember, too, that Hallden Shears are completely automatic.

Take *your* shearing problems to Hallden, the *shearing specialists.*

THE HALLDEN MACHINE COMPANY

THOMASTON, CONNECTICUT

Sales Representatives

The Wean Engineering Co., Inc., Warren, O. T. E. Dodds, Pittsburgh, Pa.
W. H. A. Robertson & Co., Ltd., Bedford, England

AISE Exhibitors

Company Name	Booth No.
Federal Electric Products Co., Newark, N. J.	233
Flower Mfg. Co., D. B., Philadelphia	450
Foote Brothers Gear & Machine Corp., Chicago	25
FOUNDRY	120
Foxboro Co., Foxboro, Mass.	486
Fulton Foundry & Machine Co. Inc., Cleveland	471
Garlock Packing Co., Palmyra, N. Y.	255
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.	278
General Electric Co., Trumbull Electric Dept., Plainville, Conn.	281
Gould-National Batteries Inc., Trenton, N. J.	5
Gulf Oil Corp., Pittsburgh	274
Guyan Machinery Co., Logan, W. Va.	133
Hagan Corp., Pittsburgh	146
Harnischfeger Corp., Milwaukee	95
Harrington Fishel Co.	460
Hauck Mfg. Co., Brooklyn, N. Y.	56
Heil Process Equipment Corp., Cleveland	346
Heyl & Patterson Inc., Pittsburgh	494
Holophane Co. Inc., New York	72
Homestead Valve Mfg. Co., Coraopolis, Pa.	264
Hunt & Son Inc., C. B., Salem, O.	350
Hyatt Bearings Div., General Motors Corp., Harrison, N. J.	286
Hyde Park Foundry & Machine Co., Hyde Park, Pa.	254
I-T-E Circuit Breaker Co., Philadelphia	252
Ideal Industries Inc., Sycamore, Ill.	7
Industrial Heating	466
Insul-Mastic Corp. of America, Pittsburgh	98
Iron Age	16
Iron Lung Ventilator Co., Cleveland	50
Johns-Manville Corp., New York	143
Joy Mfg. Co., Pittsburgh	58
Kennametal Inc., Latrobe, Pa.	130
Kinney Engineers Inc., S. P., Pittsburgh	30
Koppers Co. Inc., Pittsburgh	306
Laclede Arch Co., Div. of Laclede-Christy Co., St. Louis	268
Leeds & Northrup Co., Philadelphia	99
Linde Air Products Co., New York	355
Link-Belt Co., Chicago	117
Lintern Corp., Berea, O.	1
McDowell Co. Inc., Cleveland	125
MACHINE DESIGN	120
Mackintosh-Hemphill Co., Pittsburgh	78
Magnaflux Corp., Chicago	453
Manco Mfg. Co., Bradley, Ill.	491
Markal Co., Chicago	352
Martindale Electric Co., Cleveland	207
Matthews & Co., James H., Pittsburgh	3
Metalloid Corp.	467
Medart Co., St. Louis	148
Mesta Machine Co., Pittsburgh	288
Metal & Thermit Corp., New York	478
Metal Progress	151
Mid-West Abrasive Co., Owosso, Mich.	463
Midwest Lighting Products Co., Cleveland	324
Mine Safety Appliances Co., Pittsburgh	407
Minneapolis-Honeywell Regulator Co., Philadelphia	259
Morgan Construction Co., Worcester, Mass.	344
National Alloy Steel Div., Blaw-Knox Co., Pittsburgh	276
National Carbon Co., New York	355
National Electric Coil Co., Columbus	322
Nelson Stud Welding Div., Gregory Industries Inc., Lorain, O.	89
NEW EQUIPMENT DIGEST	120
North American Mfg. Co., Cleveland	403

The Airco 6035 scarfing torch keeps slabs and billets moving toward the rolling mill. Without interruption! It's light . . . sturdy . . . built for billet yard service. Monel metal heads and stainless steel tubes absorb the shock of high temperatures and rough handling . . . while "finger-tip balance" helps to keep operator fatigue from dragging down scarfing tonnages.

The Airco 6035 is a high-capacity torch — cutting a wide 2½" swathe. Precision-machined tips accommodate acetylene, natural gas or propane. A major contribution to trouble-free operation is provided by the starting rod with its smoother feed . . . easier maintenance . . . *longer life.* Further information? Contact your nearest Airco office!

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. . . OVERSHADOWING ALL OTHERS

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SHOW

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NATIONAL METAL EXPOSITION

NATIONAL METAL CONGRESS

the big **'52** *metal show*

OCTOBER 20-24 • PHILADELPHIA, PA.

AISE Exhibitors

Company Name	Booth No.
Ohio Carbon Co., Cleveland	348
Ohio Electric Mfg. Co., Cleveland	40
Okonite Co., Passaic, N. J.	221
Osborn Mfg. Co., Cleveland	410
Pannier Corp., Pittsburgh	325
Penton Publishing Co., Cleveland	120
Pick Mfg. Co., West Bend, Wis.	445
Pittsburgh Gear Co., Pittsburgh	480
Plasteel Products Co., Washington, Pa.	490
Poole Foundry & Machine Co., Baltimore	319
Post-Glover Electric Co., Cincinnati	74
Pringle Electrical Mfg. Co., Philadelphia	457
Protective Coatings Inc., Detroit	472
Pyle-National Co., Chicago	97
Ramtite Co., Chicago	328
Ready-Power Co., Detroit	11
Red Seal Electric Co.	464
Reintjes Co., George P., Kansas City, Mo.	14
Reliance Electric & Engineering Co., Cleveland	250
Republic Flow Meters Co., Chicago	330
Republic Stamping & Enameling Co., Canton, O.	437
Robinson Pipe Cleaning Corp.	8
Robinson Ventilating Co., Zelienople, Pa.	9
Rockbestos Products Corp., New Haven, Conn.	219
Roller-Smith Corp., Cleveland	418
Rollway Bearing Co. Inc., Syracuse, N. Y.	217
Rome Cable Corp., Rome, N. Y.	209
Ross Carrier Co., Benton Harbor, Mich.	482
Rust-Oleum Corp., Evanston, Ill.	334
Salem-Brosius Inc., Pittsburgh	310
Selas Corp. of America, Philadelphia	110
Sheffield Corp., Dayton, O.	226
Shell Oil Co., New York	353
Sherman Electric Co. Inc., Warren, O.	141
Signode Steel Strapping Co., Chicago	433
Simplex Wire & Cable Co., Cambridge, Mass.	299
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SKF Industries Inc., Philadelphia	228
Smith Inc., James Campbell	455
Socony-Vacuum Oil Co. Inc., New York	284
Solvent Service Inc., Painesville, O.	331
Speer Carbon Co., St. Marys, Pa.	227
Spraying Systems Co., Bellwood, Ill.	349
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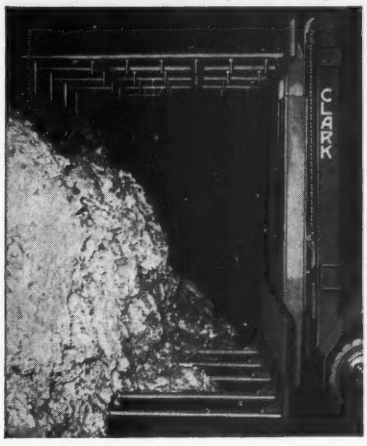
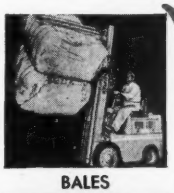
STEEL	120
Stoody Co., Whittier, Calif.	317
Sutton Engineering Co., Bellefonte, Pa.	423
Taylor Chain Co., S. G., Hammond, Ind.	76
Texas Co., New York	342
Thompson Electric Co., Cleveland	400
Tide Water Associated Oil Co., New York	108
Timken Roller Bearing Co., Canton, O.	104
Toledo Scale Co., Toledo, O.	86
Tool Steel Gear & Pinion Co., Cincinnati	365
Trabon Enginering Corp., Cleveland	29
Trion Inc., McKees Rocks, Pa.	55
Union Carbide & Carbon Corp., New York	355
Velan Engineering Co.	363
Wagner Electric Corp., St. Louis	257
Waldron Corp., John, New Brunswick, N. J.	247
Wean Engineering Co. Inc., Warren, O.	145
Webb Co., Jervis B., Detroit	468
Wellman Engineering Co., Cleveland	272
Western Precipitation Corp., Los Angeles	152
Westinghouse Electric Corp., Pittsburgh	201
Wilson Engineering Co., Lee, C'eveland	80
Wing Mfg. Co., L. J., New York	302
Yale & Towne Mfg. Co., New York	405
Zurn Mfg. Co., J. A., Erie, Pa.	427



Quoted from an article* in TEXTILE WORLD by MICHAEL J. KOROSKYS, Ass't Prof., Wool Dept., Lowell Textile Institute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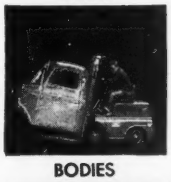
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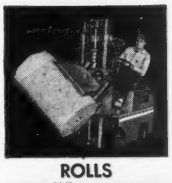
BOTTLES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TIRES

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New "GRAPH-MO HOLLOW-BAR" longer wear of Graph-Mo with the

HERE'S big news for makers of ring gages, dies and other ring-shaped tool steel parts! A new product—"Graph-Mo Hollow-Bar"—gives you all the advantages of Graph-Mo tool steel *plus* all the advantages of a hollow bar section.

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And you get all the proven advantages of Graph-Mo—a special kind of tool steel that contains free graphite and diamond-hard carbides in its structure.

User reports show that Graph-Mo outwears other tool steels an average of three to one.

Tests prove it machines 30% faster than other tool steels.

It has minimum tendency to pick up, scuff or gall.

12-year tests prove it's the most stable tool steel made.

It gives uniform response to heat treatment.

All these advantages, plus the economy of the hollow bar section, make "Graph-Mo Hollow-Bar" the big news of the year for makers of ring-shaped tool steel parts.

"Graph-Mo Hollow-Bar" comes in sizes ranging from 4" to 16" O.D. with a variety of wall thicknesses. It is distributed through A. Milne and Company and Peninsular Steel Company. And it's available in the following cities: New York, Boston, New Britain, Philadelphia, Buffalo, Pittsburgh, Cleveland, Akron, Dayton, Toledo, Detroit, Grand Rapids, Indianapolis, Chicago and San Francisco.

ADVANTAGES OF GRAPH-MO

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- Machines 30% faster
- Minimum tendency to pick up, scuff or gall
- Uniform response to heat treatment

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- Less scrap loss
- More parts per ton of steel

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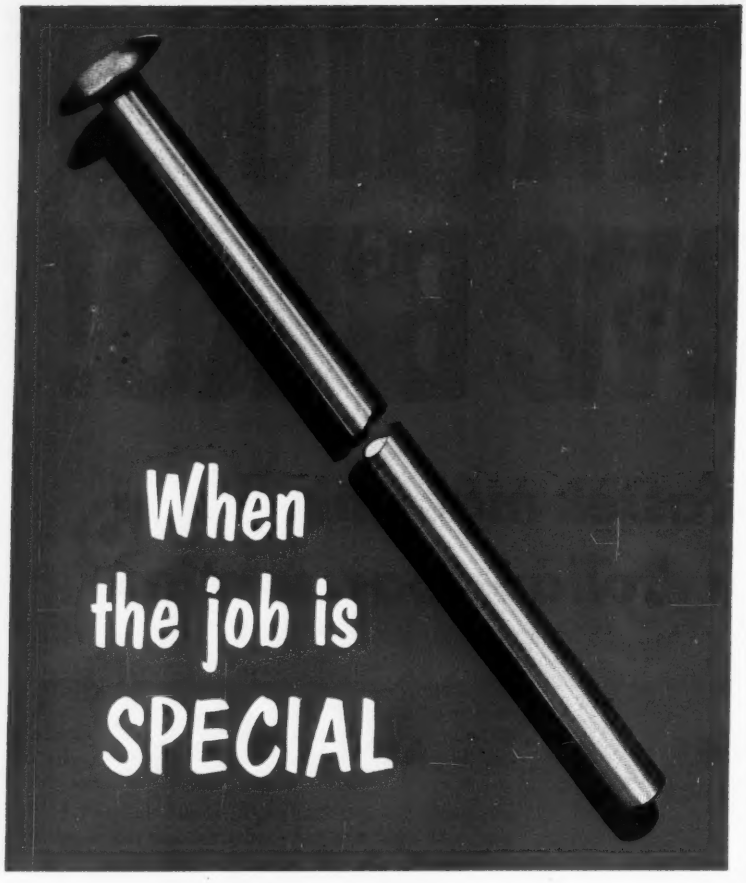

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Furnace Changes Needed

Low shaft design would widen limits of raw materials use and cost less, Swiss expert says

DEPARTURE from conventional methods of smelting ore in blast furnaces is needed to best utilize dwindling high grade raw materials says Prof. Robert Durrer of Zurich Polytechnicum and director of Louis de Roll Iron & Steel Works, Switzerland. Low shaft furnaces instead of the high shaft units currently used are, he believes the answer. Little hope is held out for the success of current direct reduction techniques in the author's report to the United Nations Economic Commission for Europe.

Fundamental defect in blast-furnace smelting the report continues, is the use of atmospheric air, since it leads to the production of vast quantities of gas, which draw off equally vast amounts of heat from the hearth in the direction of the top of the furnace. In order that this heat can be substantially transferred from the rising gas to the descending charge, very high furnaces are required, up to almost 30 meters high. Moreover, this height is required to make indirect reduction (i.e. reduction with oxide of carbon) as thorough as possible and thereby to lower coke consumption.

Advantages—Lowering the specific quantity of gas, lowers furnace height requirements, as electric smelting has shown in practice. Experience with the electric blast-furnace, modeled on the coke blast-furnace, that reduction takes place only at the bottom of the shaft led to the introduction of the electric low-shaft furnace, consisting of no more than a hearth. Other things being equal, a lower furnace is also cheaper, but its greatest advantage is that it widens the limits of the raw materials that can be used. At one end of the scale is the blast-furnace with its high shaft, i.e. the furnace with a very high charge (high-charge furnace); at the other, the low-charge furnace.

If we are to make the fullest possible use of available raw materials we must go over from the high-charge to the low-charge

No other shop presses

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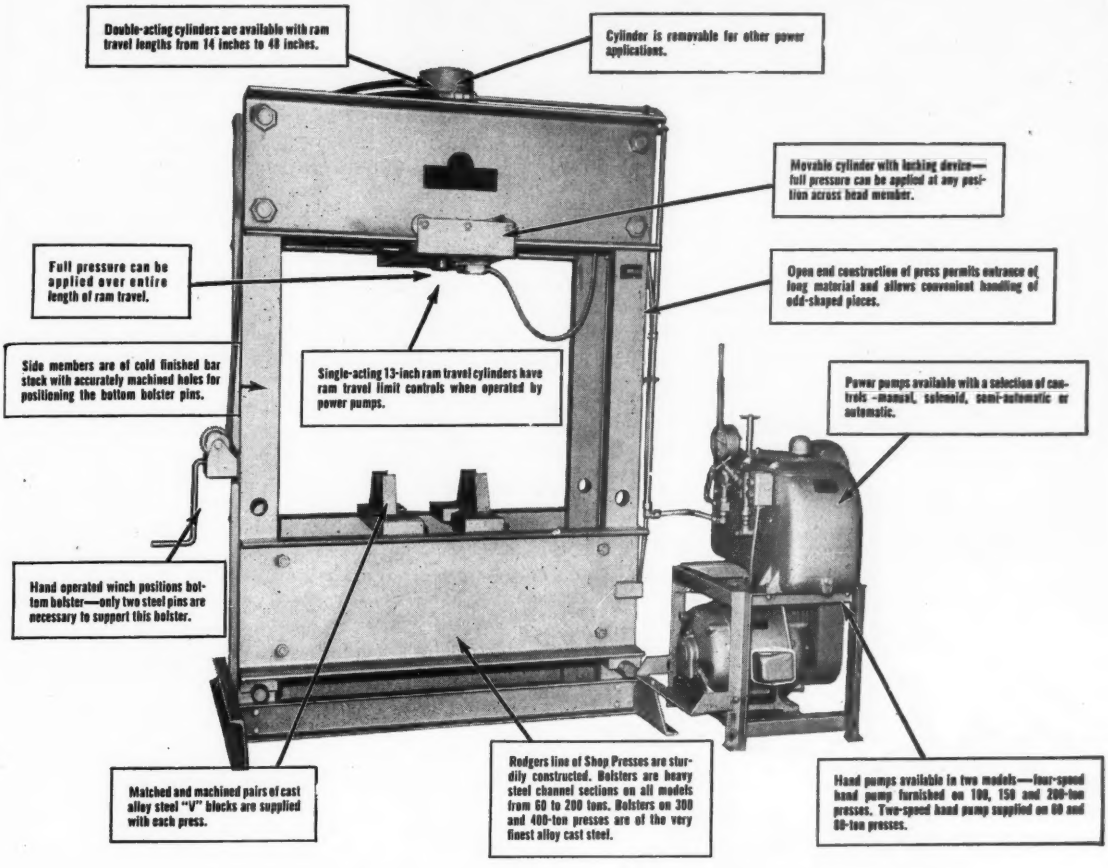
Double-acting cylinders are available with ram travel lengths from 14 inches to 48 inches.
Cylinder is removable for other power applications.
Movable cylinder with locking device—full pressure can be applied at any position across head member.
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Although you can't see performance by looking at a press, you can see the features which make outstanding performance possible. That's why we illustrate here, a few of the many features incorporated in Rodgers Hydraulic Shop Presses. They are an exclusive combination of features that insure top performance, high efficiency and long, trouble-free service. Many other important features of Rodgers Shop Presses are shown in the new illustrated Catalog No. 313A. Write today for your free copy and then compare—point for point—feature for feature.

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Pictures Without Light

MOVIES in the dark—taken in the dark, that is—are now possible with a film announced by Eastman Kodak Co., Rochester, N. Y. It's sensitive to infrared, the invisible light.

New film can be used in any standard 16 or 35mm motion picture camera accepting roll film or 16mm magazines.

Known as Kodak Spectroscopic I-N film, it originally was intended for use by spectrographic laboratories. It's now being used for high-speed photography where its sensitivity to the infrared range of the spectrum makes it valuable for recording, without supplemental illumination, the flow and action of molten or hot metals.

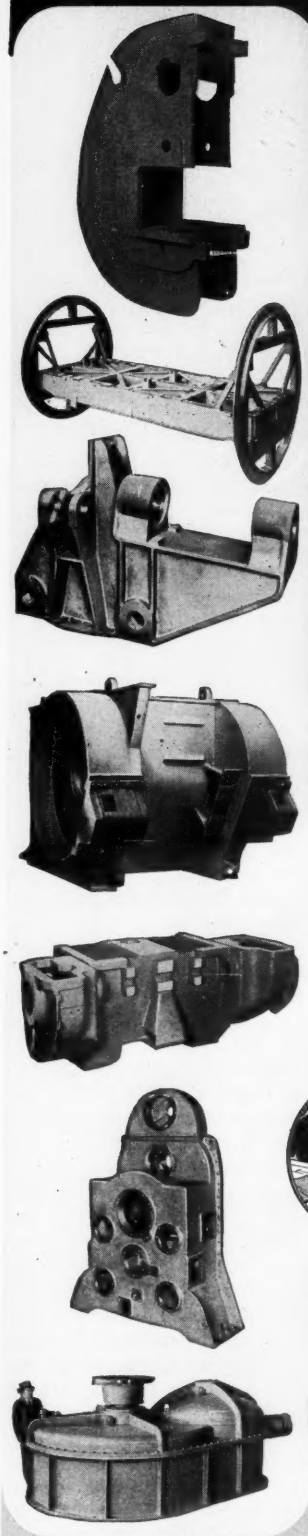
process, i.e. substitute low-charge for high-charge furnaces, Prof. Durrer says. The electric low-shaft furnace is a practical example of a low-charge furnace; but there are limits to its uses because it operates on hydroelectric power, so that it can only replace the blast-furnace to a minor extent.

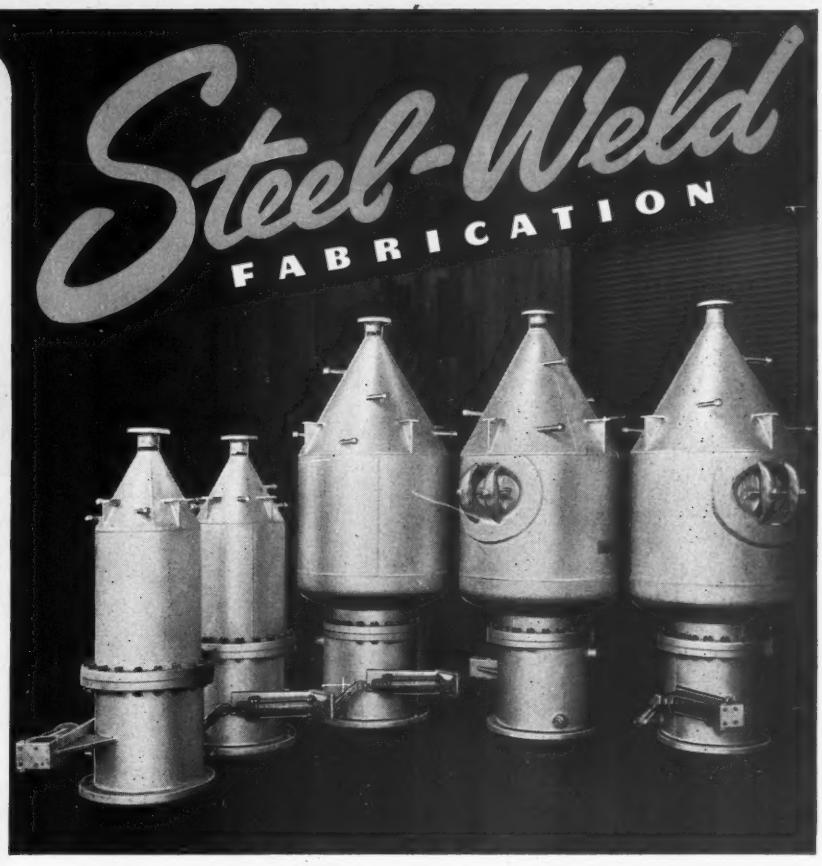
Promising Area—Specific quantity of gas can be reduced, although to a lesser extent than by the supression of the blast (as in electric smelting), by the complete or partial elimination of nitrogen and the shaft can be shortened at the same time. In this direction may lie the best prospects of development for the smelting of ferrous minerals with the help of any kind of solid fuel.

Blast furnaces are quite unsuitable for the reduction of ores with oxygen; the enrichment of the blast with oxygen only has a favorable influence on production and coke consumption only as long as the temperature of the furnace gas remains well above 100° C. These advantages themselves are relatively small. The main advantage of reduction with oxygen cannot be achieved in blast furnaces, but only in low-shaft furnaces. This need not prevent the small advantages to be gained by the use of oxygen in existing blast furnaces which, it may be added, are similar to those achieved by increasing the pressure of the blast. The fundamental defects of blast furnaces can only be mitigated, not removed.

Since existing blast-furnaces will

Steel-Weld
FABRICATION





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Illustrated above are parts of a pneumatic pipeline conveying system. Each unit embodies an Air Operated Swing Check Valve and Lower Pressure Chamber. These completely machined and assembled units, together with those at the left, are presented as further evidence of the versatility of the Mahon organization in producing and machining Steel-Weld Fabricated parts and assemblies for hundreds of manufacturers throughout the country. If you have parts or assemblies in your product that could be redesigned and produced to better advantage from a strength—weight—bulk standpoint, or, if you are faced with a limited production on an item involving heavy pieces in which pattern costs are a consideration, you can turn to Mahon with confidence. You will find in the Mahon organization a unique source with complete, modern fabricating, machining and handling equipment to cope with any type of work regardless of size or weight . . . a source where skillful designing and advanced fabricating technique are supplemented by craftsmanship which assures you a smoother, finer appearing job, embodying every advantage of Steel-Weld Fabrication.

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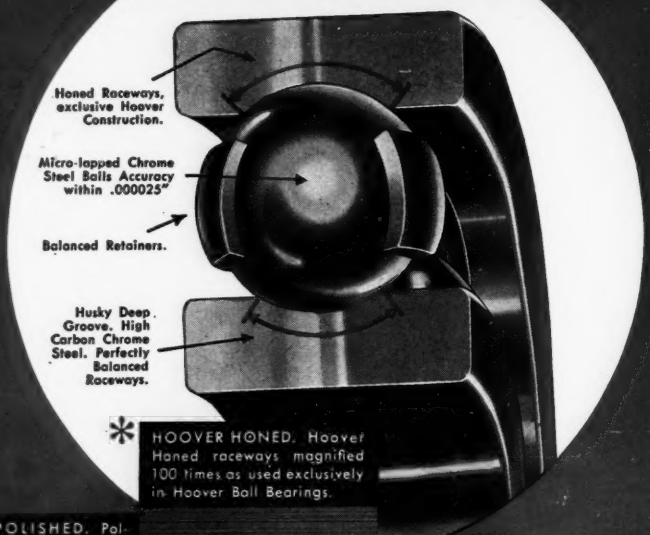
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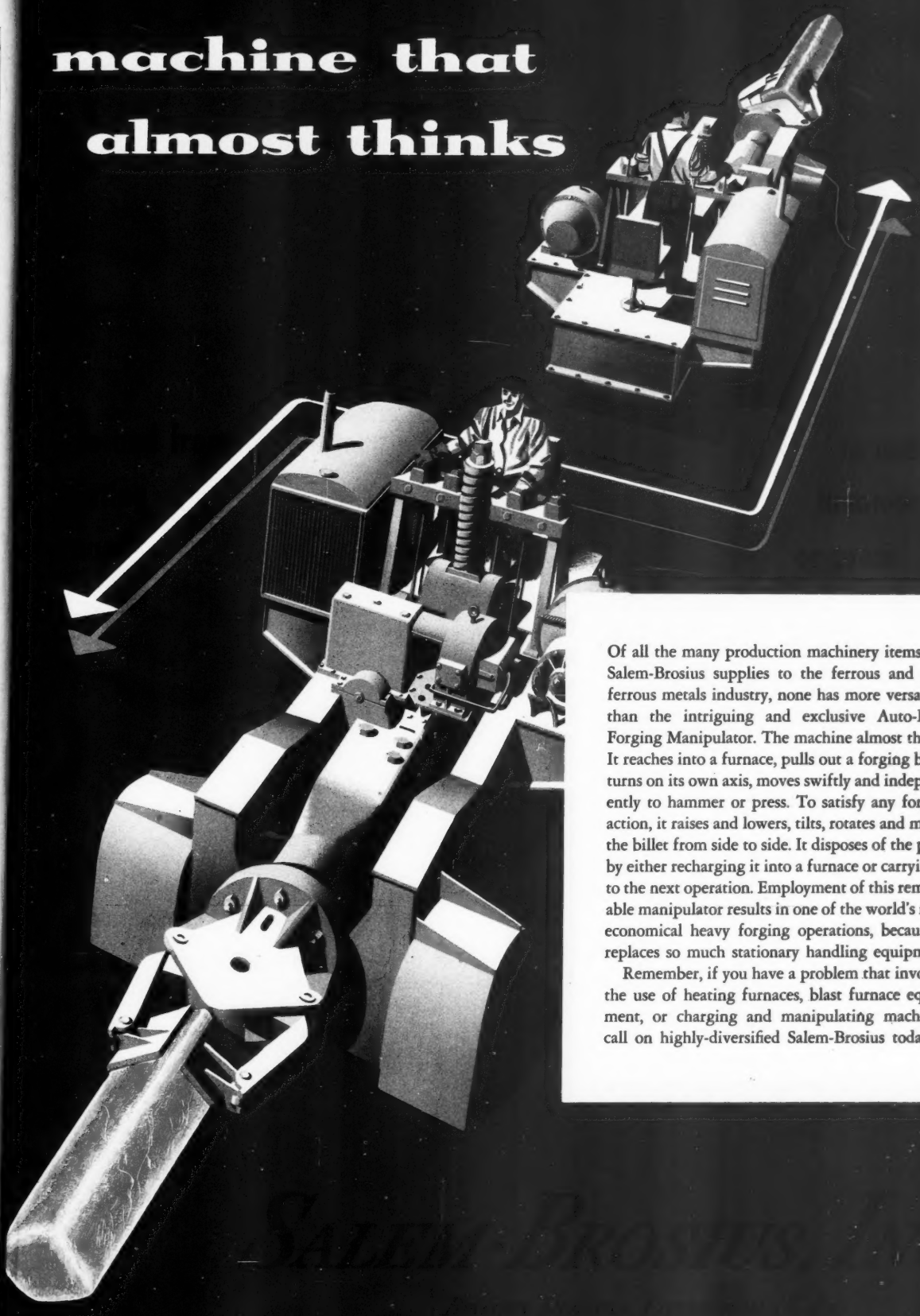
have to be used, they will remain for many years to come the foremost smelting apparatus. The process for reduction with oxygen in low-shaft furnaces, which has been proved in principle, should however be worked out without delay, so that it may be adopted wherever new iron and steel plants are erected or circumstances are otherwise suitable.

Wide Field — Metallurgical advantages of the oxygen low-shaft furnace apply not only to the production of iron, but also to other metals and alloys, particularly those with a high point of fusion. The ferroalloys which cannot be produced in blast furnaces should only be produced in the oxygen low-shaft furnaces, as soon as the process has been developed in practice and when the coal is cheaper than electricity per calorie.

Charge is even lower than in the low-shaft furnace when it is spread over in thin layers in the bath. Reaction conditions are ideal: Fine ore is reduced by an admixture of fuel or by the carbon in the bath or both. Heating takes place via the bath, for example by oxygen blast, the burnt carbon being replaced by charging more fuel. The idea is old, but it has never yet been put into practice. If the difficulties in the way, which are practical rather

machine that almost thinks



Of all the many production machinery items that Salem-Brosius supplies to the ferrous and non-ferrous metals industry, none has more versatility than the intriguing and exclusive Auto-Floor Forging Manipulator. The machine almost thinks. It reaches into a furnace, pulls out a forging billet, turns on its own axis, moves swiftly and independently to hammer or press. To satisfy any forging action, it raises and lowers, tilts, rotates and moves the billet from side to side. It disposes of the piece by either recharging it into a furnace or carrying it to the next operation. Employment of this remarkable manipulator results in one of the world's most economical heavy forging operations, because it replaces so much stationary handling equipment.

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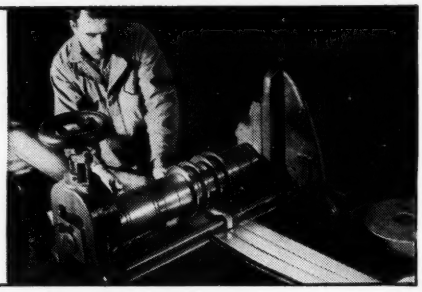
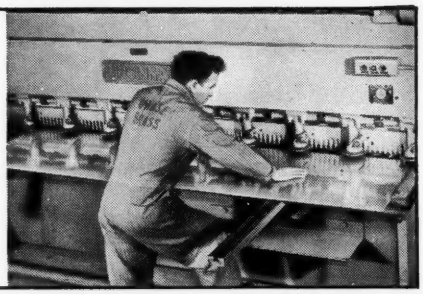


These 7 Chase warehouses do SHEARING

CHICAGO
PHILADELPHIA
MILWAUKEE
ST. LOUIS
DETROIT
NEW YORK
NEWARK

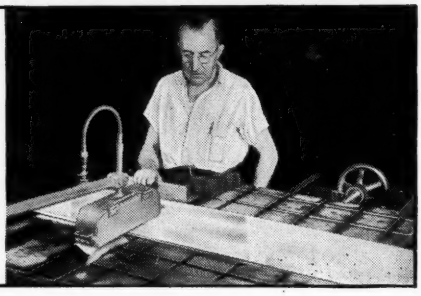
These warehouses also do slitting



These 4 Chase warehouses do SAWING

DETROIT
NEW YORK
NEWARK
CHICAGO

These warehouses also do slitting and shearing



When it comes time for slitting, shearing or sawing, check the Chase Warehouses listed above for the cutting facilities each of them have.

Naturally, this work is done to your specifications on orders for metals we are able to fill. We'll help out, too, on *your* brass, bronze, copper, aluminum, steel, fibreboard or other materials. Just tell us how you want it. The work will be done accurately and to your liking.

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Now because the revised forks cannot be lowered to the floor, lifts must be made from a platform at least 12 inches above floor level. However, new prongs can be changed and floor-level ones substituted in less than five minutes.

than fundamental, could be overcome, iron ores and coal fines could be used direct in iron production.

Another Way—An equally low charge is used for smelting in the rotary furnace, in which, as distinct from the shaft furnace, the material to be reduced is heated from the outside, while reduction takes place inside, as in the shaft furnace. The heating from outside is much less effective since it is slower and entails much loss as well as being very severe on the refractory-brick-lining. Heating is most efficient where the heat is produced within the material to be heated, as in the case of the shaft furnace. Smelting in the rotary furnace is already being practiced in various forms. It has the advantage that it enables fine ores to be used; its possibilities of application, at present still limited, depend upon local conditions.

Direct processes for steel production have already yielded excellent results, given suitable local conditions, if not for mass-production, at any rate for the production of special kinds of iron. This is particularly true of the processes developed and employed in Sweden for the production of sponge iron.

There are already two plants in Sweden, one of which has been in operation for more than ten years; others are under construction or planned. Such methods are also of special value in countries, like Venezuela, with rich ore and natural gas deposits; however, they will

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need to be adapted to the particular conditions.

Not Always So—Once commonly held view that steel produced from sponge iron is better, because of its purity, than that produced from scrap; is tenable if the scrap contains considerable impurities; but there is no ground for regarding sponge iron as superior merely because it is virgin iron.

Quickest and cheapest way of refining pig iron is at present the air-blast method, that is oxidation with atmospheric oxygen. A large proportion of the pig iron is nevertheless converted into steel by combining with oxygen in the open-hearth furnace which is a slow and expensive process. This essentially complicated method must be employed, since the hearth furnace is the scrap smelter *par excellence* and open-hearth steel is in many respects superior to converter steel.

Heat Loss—Cause of the inferiority of the converter process can be traced to the air-blast, as under the present method, the nitrogen in the blast absorbs so much heat from the bath that the quantity of scrap (cold metal) that can be added is relatively negligible, and so much nitrogen enters into the steel that the latter contains substantially more nitrogen than open-hearth steel. By employing a blast rich in oxygen and a sufficiently low content of nitrogen, the heat absorbed by the nitrogen in the normal air-blast process remains in the steel, which then has a lower nitrogen content than open-hearth steel.

This process has already been proved in small converters, both acid and basic; tests have been made in an acid converter of 15 tons but there are still difficulties, although not of a fundamental character, in the way of applying the process in a large basic converter. As soon as these are overcome most of the scrap now remelted in the open-hearth furnace can be regenerated in the oxygen converter with the heat now lost due to the nitrogen in the air-blast.

In the basic electric-steel furnaces where relatively small quantities of pig iron, (about one-quarter compared to scrap) are used, the blowing of oxygen is already in regular operation. The aim is not to speed up the refining of a bath of steel, as is being done in open-hearth and electric furnaces in many places, but to use the heat produced by the blowing of oxygen to melt the scrap and thereby correspondingly reduce electric consumption.

There is no doubt that the use

Tread on Me

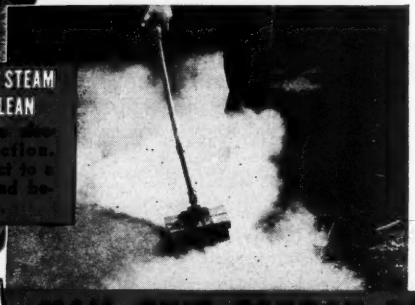
AT THE touch of a toe or the tromp of a truck you can now open or close almost any circuit.

Recora Co., Chicago, has a new line of Switchmats available in any size or shape from 2 x 2 inches to 36 x 144 inches and which are actuated by predetermined pressures ranging from a few ounces to several tons. They're only 3/16-inch thick.

Suggested applications are actuators for automatic doors, interplant traffic controls, safety and production devices for machine operators, entry alarms and automatic lighting of yards.

Use Your Steam Supply To
CLEAN BETTER, FASTER
WITH THE Clayton Hydro STEAM CLEANER

Quickly and easily connected to any ¾", 60 p.s.i. steam outlet, the portable Clayton Hydro Steam Cleaner provides a heavy-duty cleaning and sterilizing system. It employs steam to pick up, mix and deliver a driving spray of properly balanced cleaning or sterilizing solution at controlled pressures and temperatures. *Where it hits, it's clean.* The toughest cleaning job is completed more thoroughly in one quarter the time required by obsolete hand cleaning methods. Mail the coupon for a FREE, convincing demonstration in your own plant.



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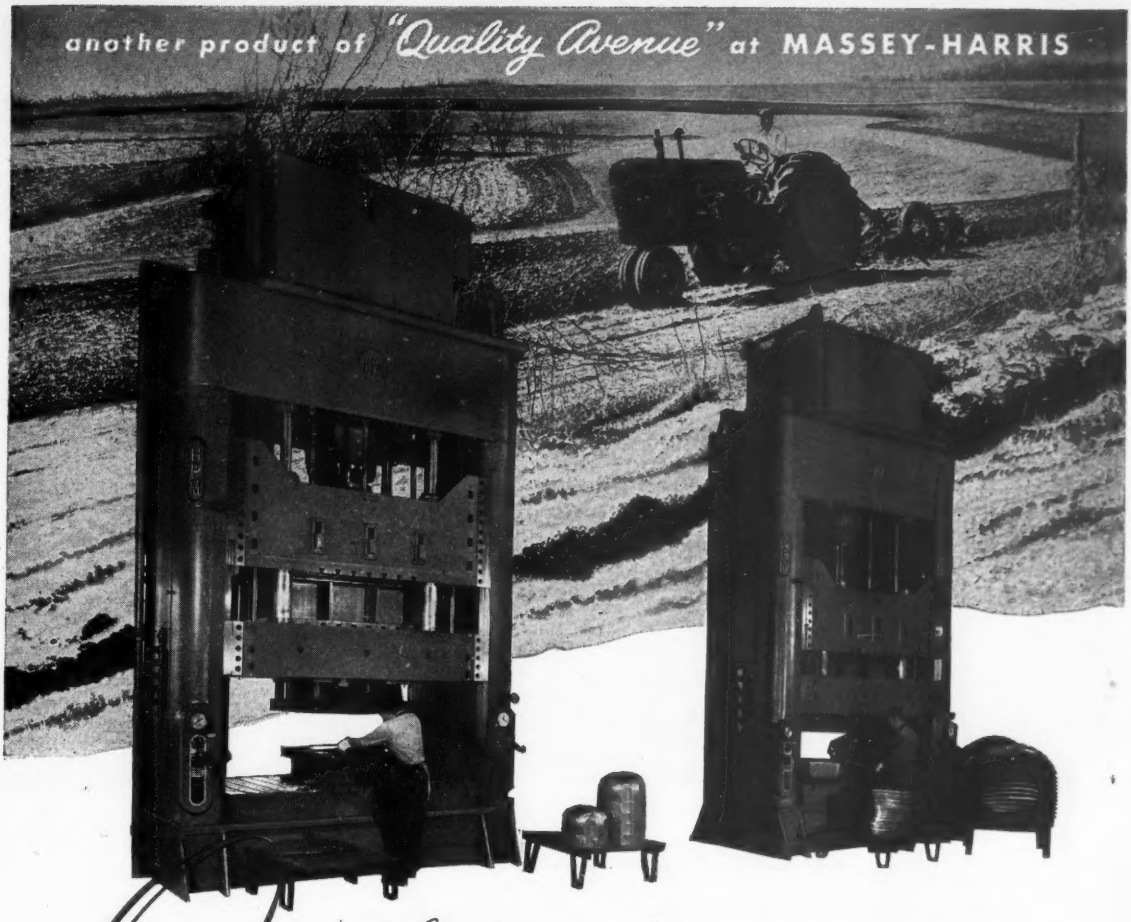

Quality

COUNTS . . . AND YOU GET IT WITH H-P-M

Quality is the theme at Massey-Harris Company . . . in fact, the production line in their tractor plant at Racine, Wisconsin is known as "Quality Avenue".

An important part of "Quality Avenue" are the H-P-M 400-ton capacity Fastraverse Presses shown above producing parts for the Model 44 Massey-Harris Tractor. The triple action press at the left forms two grille tops in a single operation; a 28" x 30" blank is drawn 11" deep. The double action press at the right produces fenders from a blank 43" x 36", drawn to a depth of 5". Both presses average 16 hours a day, 5 days a week.

The men at Massey-Harris will tell you of the outstanding performance of their H-P-M presses . . . less than 1% scrap loss . . . evidence that companies genuinely conscious of quality in their own product also look for quality in the products they buy.

Yes, we at H-P-M, too, know quality counts . . and that you'll get it in every H-P-M Press . . . quality workmanship and materials . . . backed by H-P-M's 75 years of specialized experience in the field of hydraulics.

Invite us in at the planning stage to discuss *your* production problem, won't you?

HPM 75th YEAR

THE HYDRAULIC PRESS MFG. COMPANY

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Builders of Presses for the Metal Working & Processing Industries • Plastics Molding Presses • Die Casting Machines • Hydraulic Pumps, Valves & Power Units

a matter of confidence

Specialists who designed this speed reducer entrusted production of its bronze worm gear blank to other specialists.

Foote Bros. Gear and Machine Corporation, Chicago, leading producers of Speed Reducers, Gears, and other quality Power Transmission Components for practically any industrial requirement, identify themselves with the phrase "BETTER POWER TRANSMISSION THROUGH BETTER GEARS."

For over twelve years, Foote Bros. have purchased thousands of ½ pound to 1500 pound non-ferrous gear blanks from National Bearing Division—confidently entrusting their reputation and industry leadership to special foundry skills for which National Bearing is famous.

And Foote Bros. confidence is well placed.

National Bearing's proven ability to mass produce exceptionally fine-grained, non-ferrous castings, free from blow holes and sand inclusions, can be depended upon under even the most exacting engineering and manufacturing specifications.

As a typical customer service-plus, National Bearing Division's engineers and foundrymen recently designed, and produced for customers like Foote Bros., a bronze gear blank that contains even higher physical properties.

Through a new foundry technique, National Bearing imparts greater hardness, finer grain, and more tensile strength to the bronze gear blank ring, to a depth below where the teeth are cut. In addition, this new process gives such extra advantages as higher uniformity, closer tolerances, and economy of stock.

If your product requires special mass-produced non-ferrous castings or bearings, National Bearing Division has the foundry facilities, experience, and skill that will insure better product performance, and may possibly lower product costs through production-run economies. You are invited to write to National Bearing Division for complete information.

Brake Shoe

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of oxygen as indicated is a practical possibility and it lays the basis for consideration of the use of the heat produced by the blowing of oxygen for melting scrap in production of steel. As soon as this can be proved to be completely successful, all that is required for the production of molten steel is only some sort of converter.

The transformation of iron production on the lines broadly indicated above will, in the long run, not only yield intermediate metal of vastly different composition, but also have a marked effect on preliminary preparation of the materials; the main objective to-day is to adapt the raw materials to the metallurgical processes, whereas it is wiser to suit the methods of treatment to the raw materials. In this connection, the first essential is to keep metal losses during treatment to a minimum and as far as possible to make treatment a part of the metallurgical process. The pelletization method now being developed may be of considerable value.

Cable Rating Is Up

Super Coronol power cable for service up to and including 8000 v is now rated at 85° C according to B. F. Ilsley, manager of General Electric's wire and cable department, Bridgeport, Conn.

Mr. Ilsley says he believes this is the highest rating ever announced for a solid dielectric power cable in this voltage range. Higher rating is based on life test of many cables taken from regular production.

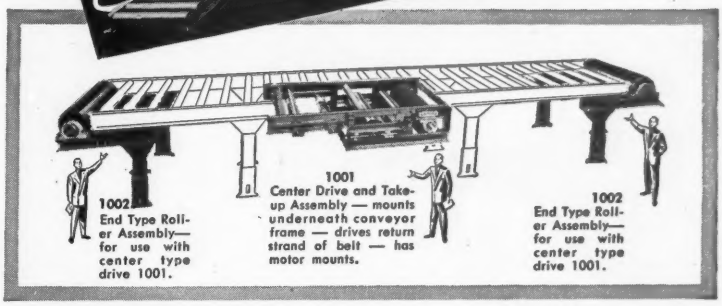
One of the tests involves cable held continuously under load at a copper temperature of 121° C. This test is now nearing the end of its fifth year and both physical and electrical properties have been stable since the 20th month.

Custom Cut Coils

Demand for metal strapping in many service industries and for field applications led to the introduction of small coils of strap cut to customer specifications. Coils are a product of A. J. Gerrard & Co., Melrose Park, Ill. They can be furnished in lengths up to 36 feet in stainless, Monel or other materials.

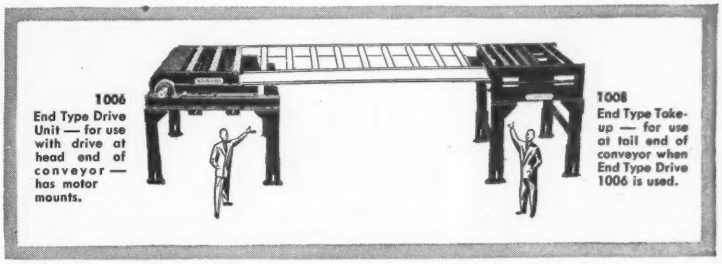
Now...ENGINEER AND ASSEMBLE YOUR OWN CONVEYOR WITH

Standard HANDIDRIVE 1000 SERIES PRE-BUILT POWER CONVEYOR UNITS


1002
End Type Roller Assembly—for use with center type drive 1001.
1001
Center Drive and Take-up Assembly — mounts underneath conveyor frame — drives return strand of belt — has motor mounts.
1002
End Type Roller Assembly—for use with center type drive 1001.

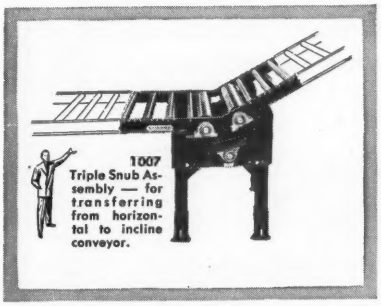
HANDIDRIVE 1001-1002 PRE-BUILT CONVEYOR UNITS

This Center Drive and Takeup Assembly drives return strand of belt—mounts underneath conveyor frame — can be used to convert present gravity conveyors to live, or powered, belt or roller conveyor or to make additions or changes to existing power conveyors. Unit 1002 is End Type Roller Assembly for use with 1001 Center Drive Assembly.


1006
End Type Drive Unit — for use with drive at head end of conveyor — has motor mounts.
1008
End Type Take-up — for use at tail end of conveyor when End Type Drive 1006 is used.

HANDIDRIVE 1006-1008 PRE-BUILT CONVEYOR UNITS

1006 is an End Type Drive Unit for use with drive at head end of conveyor. 1008 is an End Type Take-up for use at tail end of conveyor when End Type Drive 1006 is used. These two stock units make it an easy and simple matter to put together a complete power conveyor line.



HANDIDRIVE 1007 PRE-BUILT CONVEYOR UNIT

This is a Triple Snub Assembly Unit for placing in a conveyor line for transferring flow of commodities from horizontal to incline. Another of Standard's stock units that provide flexibility of planning and arrangement in making your own custom-built conveyors.

Send today for HANDIDRIVE 1000 Series and complete information. Conveyor-engineering service is offered without obligation. Series "400" and "700" units also available for lighter load applications. Write Dept. ST92

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Send for special bulletin HANDIDRIVE 1000 Series and Bulletin 638 describing Standard Gravity and Power Conveyor Units.

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And they are easy to apply! Just a simple chemical dip for only a few seconds produces the coating.

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combine to make Iridite the most economical chromate finish you can buy. Many Iridite chemicals are packed in powder form, thus can be shipped to you in steel pails at freight savings of up to 75%! Pails take less storage space, are easier to handle, eliminate carboys, need not be returned.

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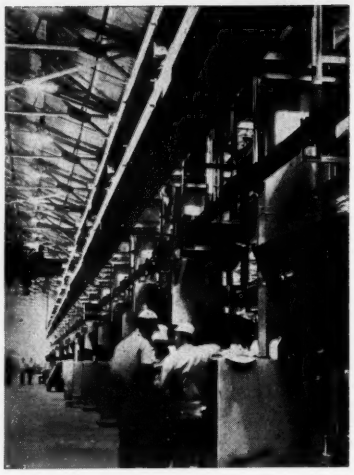


Aluminum Bus Bars

One of the largest installations of aluminum bus bars in the world—10,000 tons—is shown through the engine room of Reynolds Metals new San Patricio reduction plant. All permanent joints in the electric conductor grade aluminum system are welded. The bars carry more than 100,000 amp dc to the electrolytic cells

Aluminum Cable Use Clarified

The most serious problem met in using aluminum electrical conductor is that of connecting it. A discussion of this phase, plus an over-all review of the factors to be considered when aluminum is substituted for copper, is offered in a new publication by National Electrical Contractors Association.

The review was prepared with aid from the electrical industry and government construction agencies to point up the case for aluminum wire and cable. It lists problems involved with aluminum and suggests solutions, explaining also the elements that govern a choice between copper and aluminum in wire, cable and bus.

Copies of the booklet are available from the NECA or from Thomas & Betts Co. Elizabeth 1, N. J.

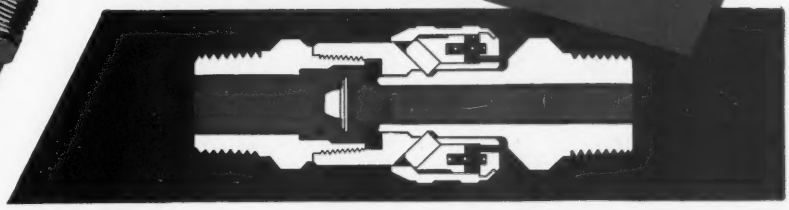
One current example of successful substitution is reported by General Electric Co.'s Trumbull Electric Department, where aluminum bus bars are being used extensively in its plug-in electrical distribution systems. Although the department says it will continue to make installations using copper, the latter

HANSEN

QUICK CONNECTIVE SHUT-OFF COUPLINGS

HYDRAULIC • PNEUMATIC

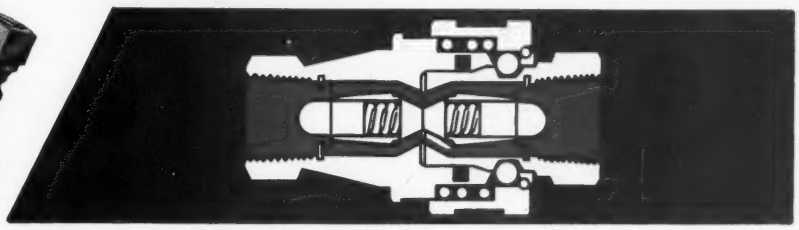
HANSEN PUSH-TITE COUPLING
Cross-section at upper right shows flow through coupling when connected.



HANSEN *PUSH*-TITE COUPLING *Shuts off one side of line*

Hansen Push-Tite Couplings give you quick connection and disconnection, with instant automatic flow or shut-off. To connect coupling, and open line to flow of fluid, you merely push plug into socket. To disconnect, a slight pull on sleeve releases plug and shuts off supply end of line. Free swiveling plug prevents hose kinks.

HANSEN SERIES HK
Shuts off both ends of line when disconnected.



HANSEN *HIGH-PRESSURE 2-WAY Shut-off* COUPLING

To connect, merely pull back sleeve and push plug into socket. Identical torpedo type valves permit free flow of gas or liquid through coupling. To disconnect, just pull back sleeve—coupling immediately disconnects, valves automatically and instantly seal both ends of line. Can be mounted to disconnect automatically where fluid lines may be subject to sudden, damaging strain.

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VACUUM • STEAM • OXYGEN • ACETYLENE • GASOLINE
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HOSE CLAMPS • HOSE CLAMP PLUGS
HOSE CLAMP SOCKETS • HOSE CLAMP COUPLINGS

Write for Catalog giving descriptions and sizes of complete Hansen line of straight through and shut-off couplings for hydraulic and pneumatic connections.

THE HANSEN MANUFACTURING COMPANY

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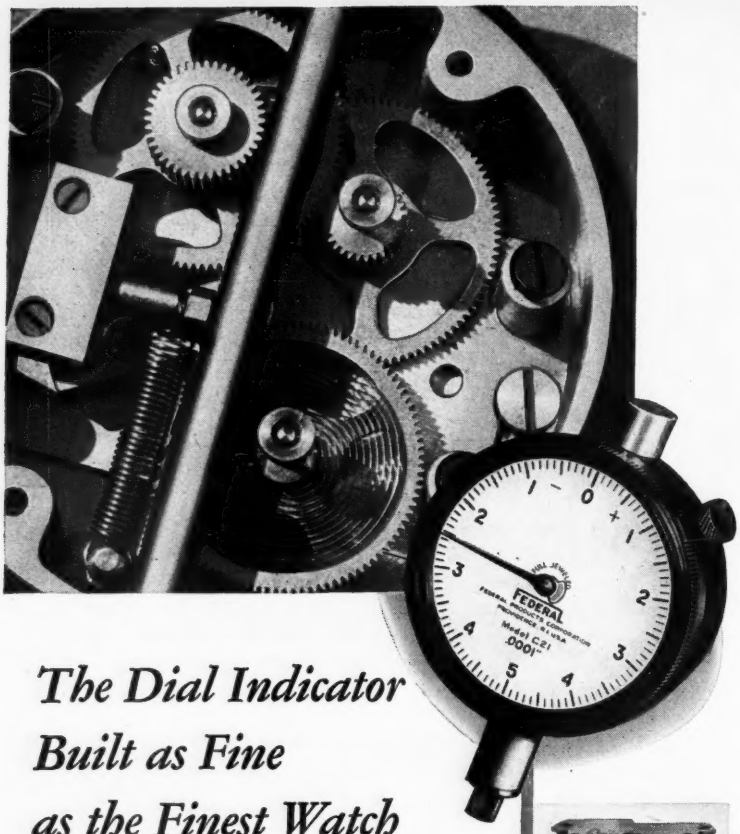
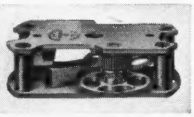


The Dial Indicator Built as Fine as the Finest Watch

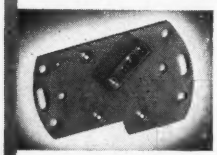
Today the Dial Indicator is built mechanically as fine as the finest watch, for years the standard of comparison for fine manufactured articles.

Gear teeth must be carefully designed and precisely cut. All bearings and bushings are fitted precisely to eliminate lost motion and excessive friction. Inertia is held to a minimum. Exceptional fidelity is required so Dial Indicator "repeats" the same reading for the same amount of variation. Stamina and durability are essential to withstand sudden shock and rough abuse.

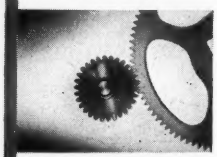
At Federal Products Corporation we are constantly aware of the importance of these requirements. Federal leads in the development of Low-Friction, Low-Inertia, Full-Jeweled Indicators. Federal's top and bottom movement plate construction has long defied improvement and Indicator maintenance men prefer it to all others. Send for Federal's latest catalog showing the most complete line of Dial Indicators and Indicating Gages. Federal Products Corporation, 1219 Eddy Street, Providence 1, R. I.



Note rigid assembly of top and bottom plates and massive support for pinion bearing — features which mean long lived accuracy.



Bottom plate of heavy gage brass showing jeweled bearings and precision workmanship.



Teeth of gears and pinions are cleanly cut — not stamped — and they mesh accurately.

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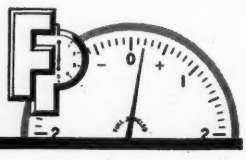

weigh from 30 to 70 per cent more than those employing the new aluminum bars.

Trumbull engineers add that lighter weight of aluminum is only one of the characteristics that make that metal readily acceptable. Under test, high transmission efficiency was established because alternating current resistance is extremely low. In addition, voltage drop is kept to a minimum.

Tool Completes 37 Operations

A sequence of varied operations on cast iron clutch housings can be performed on an automatic 22-station transfer machine designed by Snyder Tool & Engineering Co., 3400 E. Lafayette, Detroit 7, Mich. Operations include drilling, rough and finish boring, milling, sawing, tapping, spot facing, counterboring and chamfering.

The complete job means a total of 37 operations on 105 surfaces or holes of various dimensions. Production rate reaches 124 cycles an hour at 80 per cent efficiency.

Plastics Cyclopedia Readied

A working guide to all phases of plastics production and material selection, the annual *Modern Plastics Encyclopedia and Engineer's Handbook* is announced by Breskin Publications, New York. The 848-page 1952 volume also presents a complete picture of technical advances made in the industry over the past 12 months.

The new edition describes in detail all commercially available plastic materials, placing special emphasis on their suitability for specific end uses. Needs of operating and engineering personnel are covered fully in chapters on molding, extruding, casting, fabricating, finishing and assembling operations, plus a review of machines and equipment available for processing.

Numerous charts and tables contain complete chemical formulas, physical and chemical properties and ASTM specifications. To assist purchasing agents, a 132 page buyer's guide covers goods and services through all phases of the industry.

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Machining Mill Rolls
with
KENNAMETAL TOOLING

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at
KENNAMETAL EXHIBIT
SPACE
130 to 132
IRON and STEEL EXPOSITION
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AMPHITHEATRE
SEPT 30—
OCT. 3, 1952

Our exhibit will feature: an array of tools for machining rolls—rough turning, profiling, and plunge forming; typical tool layouts, with operating and performance data; finished rolls machined with Kennametal tools. Other significant steel mill tooling operations will be depicted, such as: milling, wheel boring, and trepanning.

KENNAMETAL
CEMENTED CARBIDE TOOLING
ENGINEERED **FOR STEEL MILLS**

STAR PERFORMERS at KENNAMETAL SHOW

O.D. TURNING TOOL | PROFILING TOOLS | PLUNGE FORMING TOOL

Personnel Planning

Proper personnel control program should have three qualities listed by management man

SUCCESSFUL personnel control programs should contain three essential characteristics, according to E. E. Moore, vice president, United States Steel Co., Pittsburgh. Here's what he said at an American Iron & Steel Institute regional meeting, Chicago:

"First, it should have breadth. It should be established on an organization-wide basis. This means that, to be effective, all manufacturing units — all departments within a unit—must participate fully.

"From top management's point of view, therefore, control of personnel can be meaningful only when each unit is working toward the same end in selecting and training its personnel.

Get All Levels—"Second, personnel control should encompass proper selection and training on all organizational levels. In other words, full-depth as well as full-breadth penetration. It is just as necessary that there be adequate job performance on the part of every open-hearth crew as that there be competent technicians and skilled engineers.

"But to neglect one level in favor of another is to say, in effect, that we need to control the performance of some individuals but not of others. Such unbalanced emphasis only invites future difficulties.

Short on Management — "For example, in recent years, our frequent contacts with personnel management people have impressed upon us the fact that executives across the nation are seriously disturbed by the widespread lack of executive personnel who are equipped to meet the complex challenge of the day. We have trained our foremen, but we have neglected our executives. It is a problem of critical importance and, as such, it is receiving sober and urgent attention in many quarters. Top management, in too many instances, has not been exercising full-depth personnel control.

"This shortage of executive material points up the third requisite of personnel control. It is the characteristic of time, the necessity for integrating short-range activities into a strong program for meeting long-range needs. It would be the height of folly to ignore present requirements, but progress is possible only through equal attention to long-range plans.

Fifteen Years Late—"Management personnel who are adequately trained for effective performance are unusually scarce today, because the initial steps to prepare for today's needs were not taken 10 or 15 years ago, either through lack of foresight or by reason of inaccurate forecast of make-up requirements.

"The care and attention that is put into selecting and training today will not only affect future performance favorably, but due to the inherently evolutionary nature of all personnel matters, surely will minimize problems in the years ahead."

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Use BUCKEYE Silica Firestone!
• FOR SOAKING PITS
• FOR BESSEMER CONVERTERS
• FOR BLAST FURNACE LADLES
• FOR MIXERS
• FOR GRAY IRON CUPOLAS
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Nature has endowed Buckeye Silica Firestone with every feature needed in modern refractory material. Its widespread efficiency, long life and attractive cost are well known to foundry and steel mill executives everywhere.
Under conditions where comparative tests have been made, Buckeye is first everytime! Its natural, uniformly-balanced combination of chemical and mechanical properties makes its superiority unquestioned. Its microscopically open and porous structure provides exceptional resistance to heat and abrasion.
Decide today to take advantage of Buckeye's many time-saving and money-making features. Write us at no obligation.
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OUTSTANDING NEW FEATURES INCLUDING

the polyethylene insulating tube sealer combine to make Exide-Ironclad, *more than ever before*, YOUR BEST POWER BUY . . . AT ANY PRICE.

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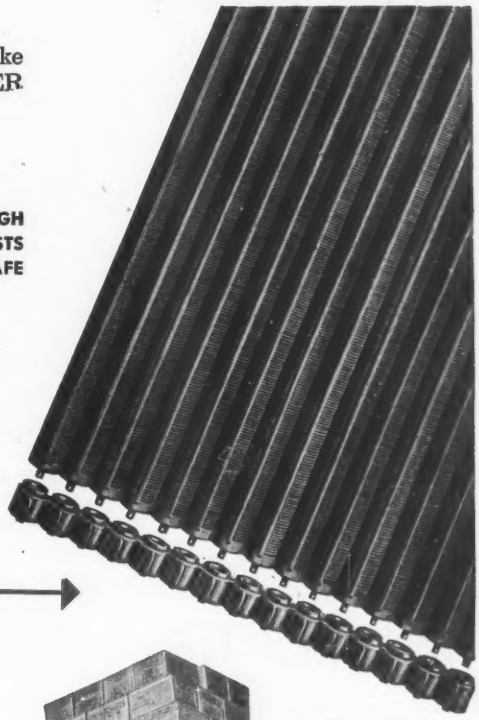
RAPID ACCURATE HANDLING . . . UNIFORM RATE OF HANDLING . . . HIGH AVAILABILITY . . . LOW OPERATING COSTS . . . LOW MAINTENANCE COSTS . . . LOW DEPRECIATION COSTS . . . HIGH MANEUVERABILITY . . . SAFE HANDLING.

BECAUSE OF . . .

IMPROVED POSITIVE PLATE CONSTRUCTION. The long-life grids now contain SILVIUM—an alloy of silver, lead and other components—which make them highly corrosion resistant.

. . . **the New Polyethylene insulating tube sealer of acid-proof, non-corroding plastic.** It fits snugly into slotted tubes of positive plate, and reduces loss of active material. Even the small sediment deposit of the past is reduced 50%. Thus more active material remains available, and the high battery capacity is maintained for a longer working life.



IMPROVED NEGATIVE PLATES for higher electrical efficiency.

NEW SEALING COMPOUND—provides permanent seal between jar and cover.

SEAMLESS SHOCK-PROOF JAR, of high quality rubber combines tensile strength and elongation for long-life and heavy-duty service.

NEW UNBREAKABLE PLASTIC VENT PLUGS of polyethylene.

TYPES, SIZES AND CAPACITIES for all kinds and makes of battery-electric trucks—hand and rider.

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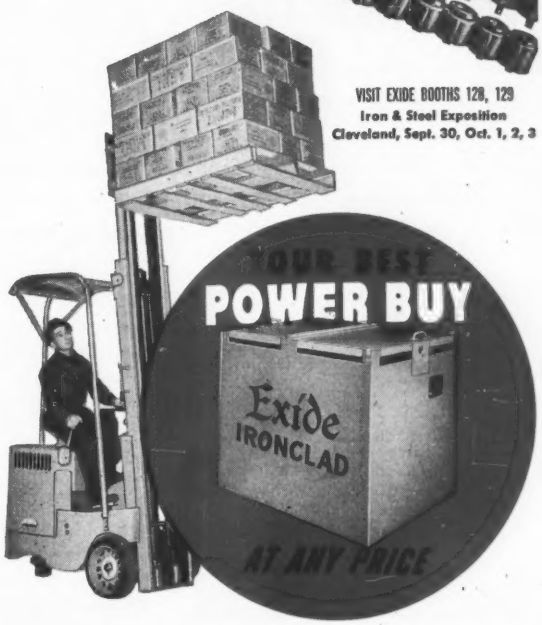
Iron & Steel Exposition
Cleveland, Sept. 30, Oct. 1, 2, 3



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Belt Speeds Coal Unloading

Unloads a full carload in just one minute—that's the capacity of the new conveyor belt installed by Rail-To-Water Transfer Corp., Chicago.

The belt is 72 inches wide and 942 feet long. It's designed to handle 3000 tons of coal per hour. This increased capacity should result in a considerable saving of cost through faster service for customers using the facility.

Made by U. S. Rubber Co., New York, the belt consists of seven plies of 42-ounce duck with a ¼-inch rubber cover on top and a 1/16-inch cover on the pulley side. It's driven by a 350-hp motor and has an operating speed of 560 fpm.

The new belt is fed by a five-car unloading facility. It was shipped by rail in two sections from the plant and was made endless at the Chicago site.

AMA Eyes Office Electronics

Growing application of electronics to office operations provides the major theme for American Management Association's fall office management conference. New developments in the use of electronic machines will be reviewed at the opening session by Prof. Howard H. Aiken, director of the computation laboratory at Harvard University. Prof. Aiken's talk is billed as one that will separate fact from fantasy on the capabilities of the new machines.

The conference is scheduled October 16-17 at the Hotel New Yorker in New York.

Training Instrument Mechanics

How to conduct an instrument mechanic training program is told in a 60-page manual from the Instrument Society of America. It covers selection of mechanic personnel, instructor's suggestions, physical equipment, reference books and films and a detailed outline of training material according to subject.

Booklet is priced at $.75 to ISA members and $1.50 to nonmembers. Address of the society is 1319 Allegheny Ave., Pittsburgh 33, Pa.

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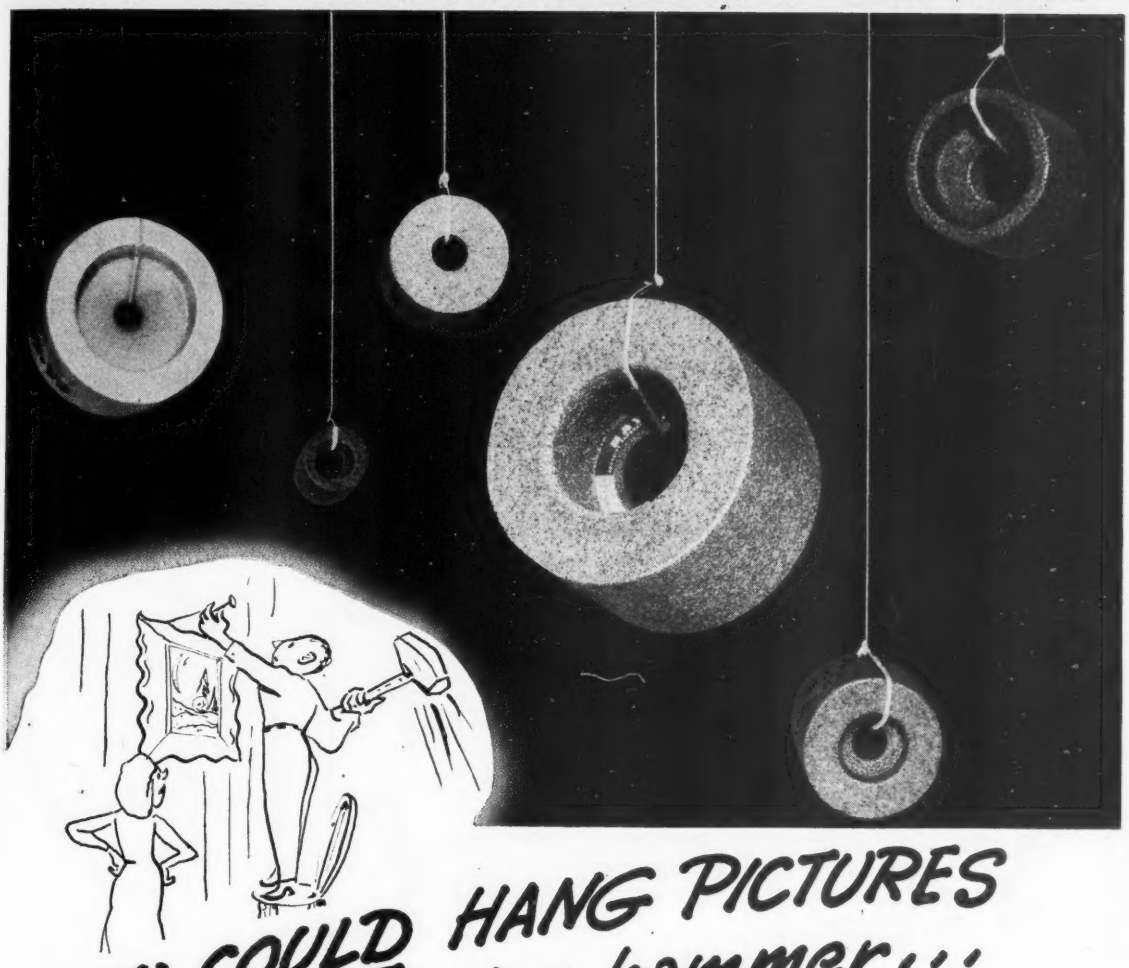

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but . . . you shouldn't — nor should you use just any internal grinding wheel when you can use Bay State's . . . proven best in the field for the countless inside grinding jobs that call for speed and accuracy.

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America's Best Looking Cap Screw

Made of high carbon steel — AISI C-1038 — to standards for Full Finished hexagon head cap screws — bright finish. Heads machined top and bottom. Hexagon faces clean cut, smooth and true, mirror finish. Tensile strength 95,000-110,000 p.s.i. Carried in stock.

"HI-CARBS"

Heat Treated Black Satin Finish

Made of high carbon steel — AISI C-1038. Furnished with black satin finish due to double heat treatment. Hexagon heads die made, not machined. Points machine turned; flat and chamfered. Tensile strength 130,000-160,000 p.s.i. Carried in stock.

"LO-CARBS"

Made of AISI C-1018 steel—bright finish. For use where heat treatment is not required and where ordinary hexagon heads are satisfactory. Hexagon heads die made to size — not machined. Points machine turned. Tensile strength 75,000-95,000 p.s.i. Carried in stock.

SET SCREWS

Square head and headless — cup point. Case hardened. Expertly made by the pioneers in producing Cup Point Set Screws by the cold upset process. Cup points machine turned. Carried in stock.

FILLISTER CAP SCREWS

Heads completely machined top and bottom. Milled slots — less burrs. Flat and chamfered machined point. Carried in stock.

FLAT HEAD CAP SCREWS

Heads completely machined top and bottom. Milled slots — less burrs. Flat and chamfered machined point. Carried in stock.

"SHINYLAND" STUDS

All studs made steam-tight on tap end unless otherwise specified, with flat and chamfered machined point. Nut end, oval point. Land between threads shiny, bright, mirror finish. Carried in stock.

*

ADJUSTING SCREWS

Valve tappet adjusting screws — Hexagon head style — to blue print specifications—hexagon head hard; polished if specified — threads soft to close tolerance—points machine turned; flat and chamfered.

CONNECTING ROD BOLTS

Made of alloy steel—heat treated—threads rolled or cut—finished to extremely close thread and body tolerances — body ground where specified. Expertly made by the pioneers in producing connecting rod bolts by the cold upset process.

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Case hardened to proper depth and ground to close tolerances. Thread end annealed. Supplied in various head shapes, with oil holes and grooves of different kinds, and flats accurately milled.

FERRY PATENTED ACORN NUTS

For ornamental purposes. Steel insert — steel covered. Finish: plain, zinc plated, cadmium plated. Size: 9/16", 3/4", 15/16" across the flats.

Tapped 1/4" to 3/4" inclusive. Cross section of Ferry patented acorn nut, showing how steel hexagon nut fits snugly into shell.

Pioneers and Recognized Specialists, Cold Upset Screw Products since 1907

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CALENDAR
OF MEETINGS

September 24-26, American Hot Dip Galvanizers Association Inc.: Fall meeting, The Greenbrier, White Sulphur Springs, W. Va. Association address: 1106 First National Bank Bldg., Pittsburgh. Secretary: Stuart J. Swennson.

September 23-October 2, National Screw Machine Products Association: Fall membership meeting, The Broadmoor, Colorado Springs, Colo. Association address: 2860 E. 130th St., Cleveland 20.

September 29-33, American Machine Tool Distributors Association: Annual meeting, The Cavalier, Virginia Beach, Va. Association address: 1900 Arch St., Philadelphia 3. Executive secretary: Thos. A. Fernley.

September 29-October 2, American Institute of Steel Construction Inc.: Annual convention, Empress Hotel, Victoria, B. C. Institute address: 101 Park Ave., New York 17. Executive vice president: L. Abbett Post.

September 30-October 3, Association of Iron & Steel Engineers: Fall meeting and exhibit, Hotel Statler and Public Auditorium, Cleveland. Association address: 1010 Empire Bldg., Pittsburgh 22. Director: T. J. Ess.

OCTOBER

October 3-4, American Institute of Mining & Metallurgical Engineers, National Open Hearth Steel Committee: Fall meeting, Southern Ohio Section, Deshler-Wallick Hotel, Columbus, O.

October 3-5, Society of Industrial Designers: Annual meeting, Shawnee Inn, Shawnee-on-Delaware, Pa. Society address: 48 E. 49th St., New York 17. Secretary: Sally G. Swing.

October 6-7, Rail Steel Bar Association: Fall meeting, Hotel Cleveland, Cleveland. Association address: 38 S. Dearborn St., Chicago. Secretary: W. H. Jacobs.

October 6-10, National Hardware Show: Grand Central Palace, Atlantic City, N. J. Managing director: Frank Yeager.

October 9, American Iron & Steel Institute: Regional technical meeting, William Penn Hotel, Pittsburgh. Institute address: 350 Fifth Ave., New York 1. Meeting director: Frank Ragland.

October 11-14, National Association of Waste Material Dealers Inc.: Fall meeting, Los Angeles. Association address: 271 Madison Ave., New York. Secretary: Clinton M. White.

October 13-17, American Institute of Electrical Engineers: Fall general meeting, New Orleans, La. Institute address: 33 W. 39th St., New York 18. Secretary: H. H. Henline.

October 14-16, Society of Industrial Packaging & Materials Handling Engineers: Annual meeting and short course, Chicago Coliseum, Chicago.

October 16-17, Gray Iron Founders' Society Inc.: Annual meeting, Hotel Cleveland, Cleveland. Society address: 210 National City-E. 6th St. Bldg., Cleveland. Secretary: Donald H. Workman.

October 16-18, Foundry Equipment Manufacturers Association: Annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Association address: Engineers Bldg., Cleveland 14. Secretary: Arthur J. Tuscany.

October 18-19, American Society for Metals: Annual seminar, Benjamin Franklin Hotel, Philadelphia. Society address: 7301 Euclid Ave., Cleveland 3. Secretary: W. H. Eisenman.

October 19-21, Conveyor Equipment Manufacturers Association: Annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Association address: No. 1 Thomas Circle, Washington 5. Executive vice president: R. C. Sollenberger.

October 19-22, American Institute of Wholesale Plumbing & Heating Associations Inc.: National convention, Chalfonte-Haddon Hall, Atlantic City, N. J. Institute address: 402 Albee Bldg., Washington D. C. Executive secretary: George T. Underwood.

October 20-24, National Metal Congress & Exposition: Convention Hall, Philadelphia. Secretary: W. H. Eisenman, 7301 Euclid Ave., Cleveland 3.

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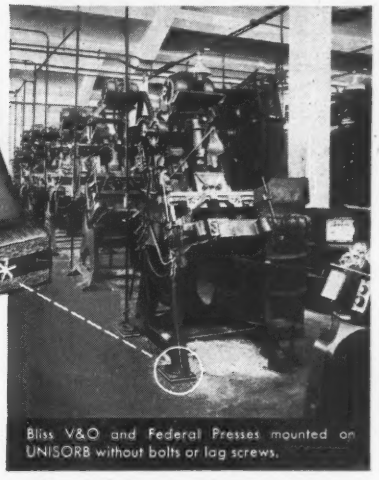

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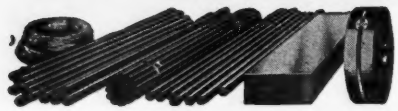

BRIDGEPORT BRASS COMPANY

COPPER ALLOY BULLETIN

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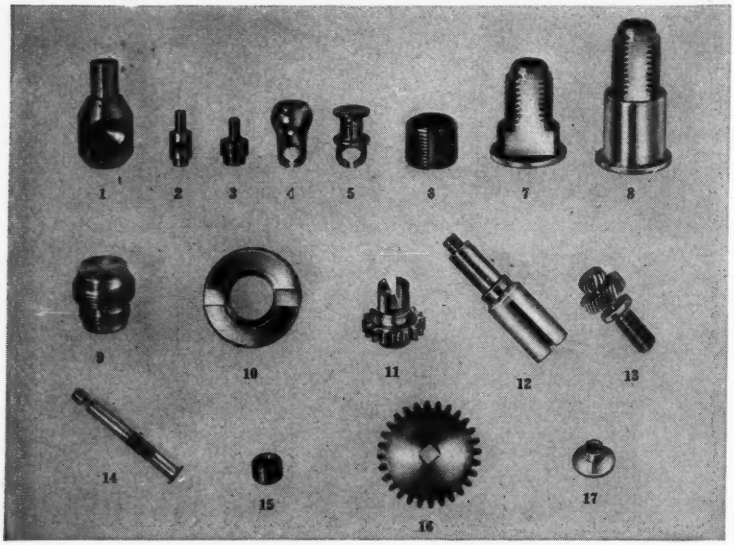


Screw machine items which required milling, side drilling, slotting, broaching or flaring operations were completely finished on the screw machine without the necessity of "secondary" operations. Courtesy The Mattatuck Mfg. Co., Waterbury, Conn.

Complete Screw Machine Operation

...including milling, slotting, broaching, cross drilling

Ingenuity, coupled with existing know-how, can often incorporate costly so-called "secondary" operations such as milling, side drilling, slotting, broaching, spinning, flaring, etc., as a complete screw machine operation.

Aside from substantial cost savings, advantages are:

1. Space and labor savings, since no additional machines and operators are needed.
2. Time saving – because some of the "secondary" operations are performed simultaneously with the preparation of the blank.
3. Economical – because the complete job leaves the machine with no parts in unfinished stages subject to possible spoilage or loss.

Since machine setup time takes considerably longer because of special chucks, holding fixtures, timing cams, etc., complete screw machine operation usually is justified on long runs.

Cross Drilling

Samples 2 and 3 were cross drilled while the machine prepared the blanks, the pick-up arm removing the finished blanks from the spindles and transferring them to the position where the cross drilling operations were performed. Sample 1 is partially cross drilled; samples 2 and 3 are cross drilled and chamferred on both sides of the hole; sample 4 was cross drilled from a side slide, then picked up and slotted to complete the piece; and sample 5 was cross drilled on a stopped spindle, then milled from the turret to make the front section complete.

Milling

Sample 6 illustrates side milling performed after the pick-up arm removes the blank and sets it into position for the milling operation.

Nos. 7 and 8 illustrate flat milling on a stopped spindle—with the milling saw installed in a fixture on the turret.

No. 9 illustrates straddle milling. Here the transfer arm picks up and holds the piece while the two saws mounted on the slotting arbor perform the straddle milling. No. 10 illustrates section milling which is performed with the help of a special twin-milling cutter head mounted in the transfer station.

Cross Slotting

No. 11 illustrates slotting on the end with a stopped spindle, the movable saw being mounted on the cross slide to accomplish a flat bottom on the milled slot. On sample No. 12, the saw was on the turret, and after one slot was cut, the saw was indexed 90° and the second slot was cut. No. 13 illustrates a slot through the threaded end. A wedge-shaped tool followed up the saw and expanded the slot for spring action in the threaded portion.

Flaring, Broaching, Shearing

Sample No. 14 was end flared or expanded by a spinning tool mounted in the turret. Nos. 15 and 16 illustrate broaching operations which were performed with the piece in the spindle prior to cutoff. No. 17 illustrates a combination shearing and forming operation which was performed on the screw machine by using a punch in a turret station.

Statistical Quality Control

To meet the tight tolerance specifications called for on items used for defense production, it is almost necessary to have the Inspection Department utilize "Statistical Quality Control." For example, five samples taken at random from each machine are carefully gauged and the results are plotted on special cross-sectioned paper, which give average and range of the specific measurements on the vertical axis and the time element on the horizontal axis. The position which these points take indicates the rapidity of tool wear, the need for tool adjustments, tool sharpening, or possibly, a change to a higher grade of tool stock such as tungsten-carbide.

With few exceptions, the parts illustrated were made from Ledrite 6, free cutting brass rod, which contains approximately 61% copper, lead 3.4% and zinc remainder. It has a machinability rating of 100 per cent and is the most widely used alloy. For specific information on rod alloys write for "Technical Handbook." (8814)

CAUSES OF CORROSION

This article is one of a series of discussions by C. L. Bulow, corrosion metallurgist of the Bridgeport Brass Company.

DEZINCIFICATION CORROSION (Cont'd)

Low Water Velocity or Stagnation

It is generally recognized that an average low water velocity or a stagnant condition may lead to dezincification in the noninhibited yellow brasses. The accumulation of debris, silt, etc., on a quiet or idle surface may initiate dezincification by producing a corrosion cell under a porous deposit of foreign matter. The accumulation of copper salts in the corrosion product or corroding solution will also accelerate dezincification. It is under the above conditions that the highest rates of dezincification have occurred.

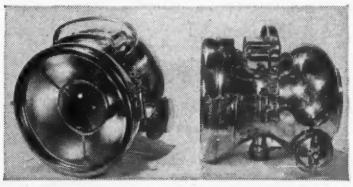
Higher Water Velocity Beneficial

Conversely, dezincification is prevented or retarded by keeping the metal surface clean and free from corrosion initiating deposits. The sweeping action of higher water velocities prevents the accumulation of debris and corrosion products (copper salts, zinc salts, rusts) on the metal surface.

The scouring action of small amounts of sand or certain types of silt in flowing water also helps to keep the surface clean. Even noninhibited Aluminum Brass condenser tubing kept clean by daily chlorination, periodic manual cleaning and a salt water velocity of 7 feet per second showed no signs of dezincification after 13 years of service. The average rate of corrosion was less than 0.00008 ipy. The same alloy suffered from dezincification when not kept clean.

At 6 or more feet per second, the rate of dezincification is as low as 0.001 ipy or less. At very high rates of flow, no dezincification has occurred. However, it must be remembered that very high velocities may lead to impingement corrosion.

Any practice or condition which keeps the brass surface clean will retard or prevent dezincification. Where this cannot be anticipated, a dezincification inhibited alloy or high-copper alloy should be used.



One of these lamps from James Melton's 1907 Rolls Royce, was completely rebuilt by Andrew Tucker and Son's Studio, Fairfield, Conn.

Which One IS THE ORIGINAL?

When James Melton of Metropolitan Opera and Museum of Antique Car fame was driving his 1907 Rolls Royce Silver Streak a few months ago, one of the gleaming brass head lamps crashed to the ground and was accidentally run over by the car.

Unfortunately, the parts of the lamp were too battered to be repaired and Mr. Melton was unable to locate a duplicate lamp either in this country or in Europe.

The head lamps had been made in France in 1906 by the famous aviator, Bleriot. They are intricate in construction and designed to be decorative as well as practical. A carbide tank on the bottom and a water tank inside are used to generate acetylene carbide gas.

Andrew Tucker and Son's Studio started with a 30" disc of brass which analyzed as closely as possible to the original in order to match the brass color. Eleven chucks of hard wood were used for spinning the shell, ring and bezel containing the glass lens. In order to avoid the cost of making up a number of special chucks for shaping the restricted portion of the lamp body, this section was spun without internal support.

Screws were turned from brass rod and after assembly with nuts on the inside, each nut was soldered to prevent loosening from vibration. Soldering assembled parts was a common practice in the days of washboard roads which shook up automobile accessories and passengers alike.

Hats off to the skill of the craftsmen who laboriously rebuilt the injured lamp so cleverly that many people thought that it was the original one.

NEW DEVELOPMENTS

This column lists items manufactured or developed by many different sources. None of these items has been tested or is endorsed by the Bridgeport Brass Company. We will gladly refer readers to the manufacturer or other sources for further information.

Three-spindle Turret Head permits sequence drilling, countersinking and tapping on a single drill press. Tool provides a selection of speeds on each spindle for specific operations at recommended speeds. Capacity of all spindles is 3/8-in. Hand lever indexing is said to be accomplished without stopping drill press motor. Adjustable torque control spindles can be supplied. **No. 1251**

Roll-type Marking Device imprints 3/16 x 8-in. legend. Said to be useful for marking entire lengths of tubes, rods and sheets, device imprints repeated pattern. Twin-roll inking system re-inks type around diewheel after each impression. Marker is supplied with type and various colored inks. **No. 1252**

Portable Air Compressors, single and two-cylinder models, have air delivery ranges from 1.5 to 3.5 cfm at 100 psi. Uses fractional horsepower motor or 1½-hp gasoline engine and is said to be useful for spraying, pressure greasing, operation of small air tools. Compressor is mounted on semi-pneumatic tired truck with air storage tank mounted below. Is said to have check valve, air regulator, gages and safety valve. **No. 1253**

Counting-weighing Machine for small parts is hand or foot-switch operated. Washers, pins, screws or other small parts are placed in a 3 cu. ft. hopper which has a vibrating unit. Parts flow from hopper into packages which rest on balance type scale. When required amount, less two or three pieces, is in package, parts flow stops. Operator completes the count and goes on to next package. Maximum package weight is 10 lbs., with heavier packages treated on special order. **No. 1254**

Power Cutoff Saw for metal pipe and tubing utilizes abrasive disk to cut pipe and tubing of various wall-thicknesses. Saw has free-moving rotating frame which encompasses piece to be cut. Cutting unit is attached to frame so both units rotate together. **No. 1255**

BRASS, BRONZE, COPPER, DURONZE, NICKEL SILVER, CUPRO NICKEL
BRIDGEPORT BRASS
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BRIDGEPORT BRASS COMPANY, BRIDGEPORT 2, CONN. • ESTABLISHED 1865
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New Products and Equipment

Surface Finishing Machine

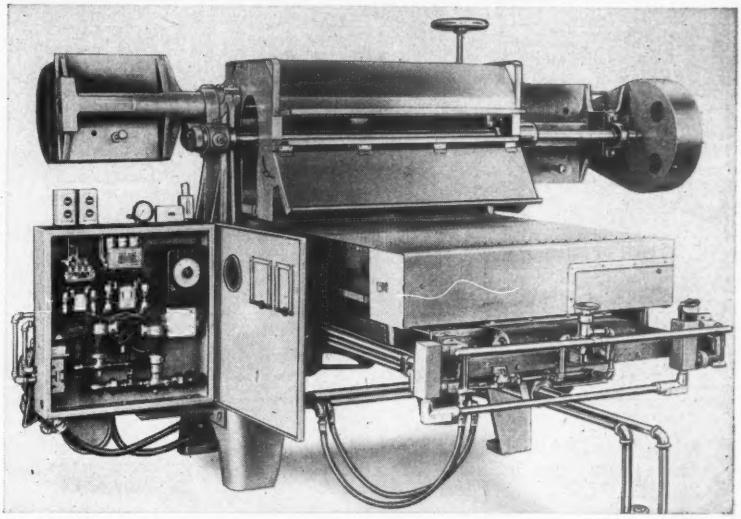
USE REPLY CARD—CIRCLE No. 1

Formed decorative name plates for refrigerators, stoves, appliances and automobile trim are surface finished by this model 203 surface finishing machine introduced by the Clair Mfg. Co. Inc., 1019 S. Union St., Olean, N. Y. Through a vacuum chuck arrangement it handles name plates of brass, copper, silver and nonmagnetic materials.

Even small items can be held and surface finished by the machine without interference with coverage over the entire surface.

Buffs used on the machine ordinarily are 9 inches diameter, but can be increased to 12 inches if desired. The machine can be equipped with motors in varying speeds up to 15 hp.

Work table consists of a perforated plate mounted over a sealed air space, the latter being connected to a vacuum pump through a 4-way spring valve. The table has both in and out and sideway strokes, both being adjustable.



FINISHING FORMED NAME PLATES

. . . even small items are held with coverage over entire surface

Heavy-Duty Geared Motors

USE REPLY CARD—CIRCLE No. 2

Double reduction geared motors in speeds 155 rpm and slower and in ratings from 5 to 25 hp are offered by Sterling Electric Motors Inc., 5401 Anaheim-Telegraph Rd., Los Angeles, Calif. The totally enclosed fan cooled units are available with class I, II, III gears.

In this drive, bearings are mounted in the outer walls of gear case and gears are mounted between these widely spaced bearings. This permits use of offset shafts and provides permanent bearing and gear alignments in uniform load distribution. Making the motors well suited for low-speed drives are corrosion resisting gray iron housing, labyrinth seals, large and safe terminal boxes, rugged helical gears.

REPLY CARDS

on page 211 will bring you more information on any new products and equipment in this section.

Keeps Work in One Place

USE REPLY CARD—CIRCLE No. 3

If your machine operators are bothered by work slipping in the vise on the machine, you can get some help from the new hold-downs made by the Ready Tool Co., 554 Iranistan Ave., Bridgeport 5, Conn.

When vise pressure is exerted the jaws are forced down, gripping the work securely. Positive seating against the bottom and the back recess surfaces takes place automatically.

Jaws are made of high grade hardened steel in three sizes: 4, 8 and 12 inches.

Miniature Clutches

USE REPLY CARD—CIRCLE No. 4

Line of miniature over-running clutches is announced by High Precision Inc., 375 Morse St., Hamden, Conn.

Typical applications for the Miniclutch are recording instruments and business machines, lubricant pumps, servo mechanisms, ratchet-feeds and control devices such as are used in gun pointing equipment.

The free-wheeling one-way miniature clutch has four rollers and features instantaneous, smooth action.

Automatic Centering Reels

USE REPLY CARD—CIRCLE No. 5

Heavy-duty automatic centering reels in 5, 10 and 20-ton capacities are introduced by F. J. Littell Machine Co., 4103 Ravenswood Ave., Chicago 13, Ill. Spindle-type reel is employed to eliminate roll-over edges and damaged surfaces sometimes encountered in this handling operation. Reels have hydraulically operated arms, contracted and expanded by hydraulic actuated cams within the spindle. As the spindle sleeve is pushed forward hydraulically the arms contract to the minimum diameter. As sleeve is pulled toward the frame the arms spread until the coil is gripped tightly.

Cams on the sleeve and on the arms are mechanically interlocked to hold arms in position, both expanded and contracted. This simultaneous expansion centers the coil perfectly. The v-type coil-loading

GRINDING AWAY FOR THE OLD BUCK!

THE JOB I DO IS LOTS OF FUN BUT PLEASE DON'T TELL THE BOSS! THAT FURNACE PUTS THE SCALE RIGHT ON AND I JUST GRIND IT OFF!
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TOOLS GO FROM FURNACE TO JOB- NO MACHINING AFTER HARDENING!
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FURNACE DIVISION
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3353 Market St., Wilmington 99, Delaware

★ ★ ★ STRAIGHT FACTS on Controlled Atmosphere are included in DELAWARE BULLETIN F-1.

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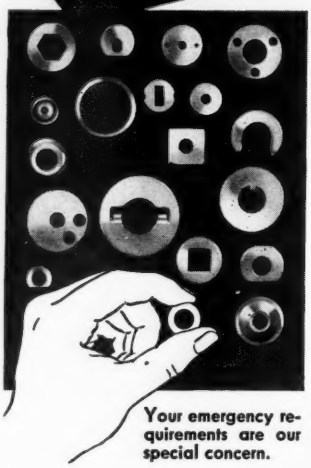
STEEL WASHERS
FOR EVERY NEED



A DEPENDABLE SUPPLIER
FOR 38 YEARS . . .

Your requirements for standard and special steel washers are sure to be satisfied at Joliet. A bank containing thousands of special dies in many shapes and forms, 9/32" to 8" O.D., gauges No. 28 to 3/8", stands ready to answer your needs. A VARIETY OF FINISHES IS AVAILABLE to meet your special needs, including: Electro-plating, Galvanizing, Parkerizing, and Cyanide hardening.

After All!
THERE'S NO SUBSTITUTE
FOR QUALITY AND SERVICE

Your emergency requirements are our special concern.

202 CONNELL AVE.
JOLIET, ILLINOIS

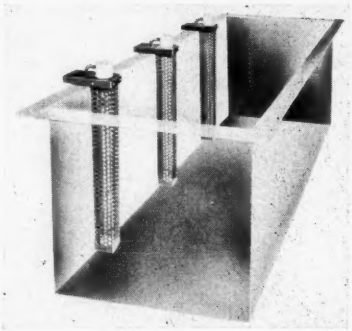
JOLIET WROUGHT WASHER CO.

car rides on a smooth-running track base. Track can be extended from machine to coil storage area, making it possible to convey materials to the reel without intermediate handling.

Immersion Type Heater

USE REPLY CARD—CIRCLE No. 6

If you're looking for a heater that overcomes many problems in connection with the heating of corrosive solutions, you might investigate the new electric immersion heater developed by Cleveland Process Co., 7016 Euclid Ave., Cleveland, O.



. . . *eliminates stray currents*

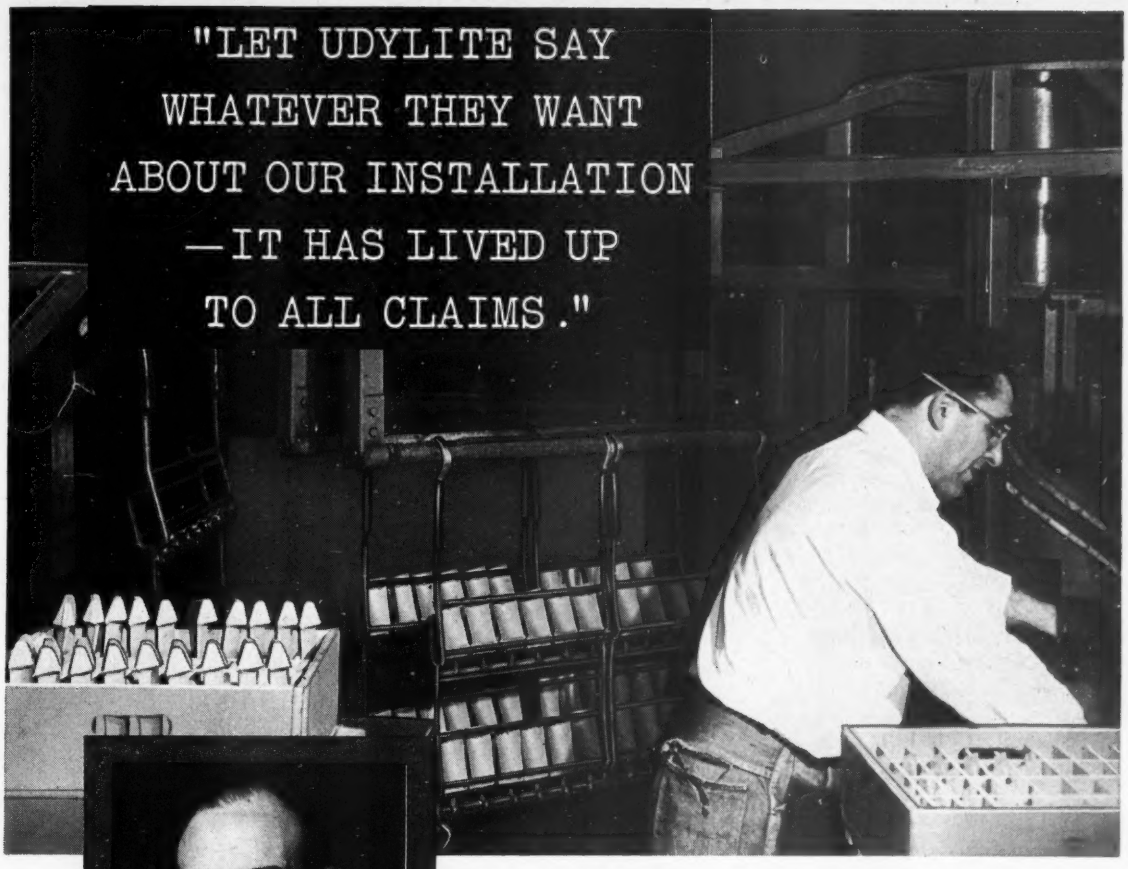
The company says it is ideal for heating all electropolishing and electroplating baths as well as phosphatizing solutions. Referred to as the Glorod, it is ruggedly constructed for protection against physical abuse. Its fused quartz body also eliminates stray currents in electroplating work. Several of the units can be used in a large tank.

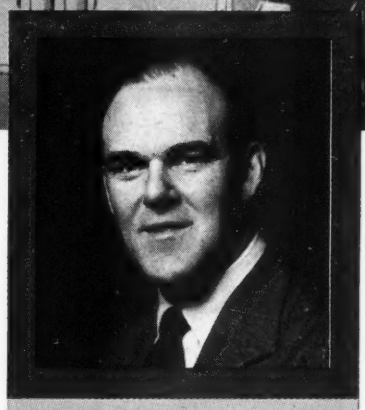
Electrically Lighted Magnifier

USE REPLY CARD—CIRCLE No. 7

Designed to speed detailed examination of materials and products through self-contained direct illumination on the object, an electrically lighted magnifier is offered by Bausch & Lomb Optical Co., Rochester, N. Y. The magnifier can be equipped with either of two types of illuminator handles—one battery powered, the other for connection with a 100-v power source. Either handle fits a reflector-type shade into which the magnifier snaps. Other accessories, which multiply the unit's applications, are

"LET UDYLITE SAY WHATEVER THEY WANT ABOUT OUR INSTALLATION —IT HAS LIVED UP TO ALL CLAIMS."





LEW WENGERT

Says Lew Wengert, Plant Superintendent of Utica Drop Forge & Tool Corporation

That was the reply we got when we asked Mr. Wengert, superintendent of the Yorkville plant of the Utica Drop Forge & Tool Corporation, about the Udylite Rotary Full Automatic in that plant. The machine is used for processing jet engine parts.

Mr. Wengert's enthusiasm is typical of Udylite customers. He has found, like many other users, that Udylite lives up to the claims made by our salesmen. The Udylite organization owes its progress and growth to the guiding principle of being honest with its customers. So, if you're in the market for equipment and supplies for a "better way in plating", it will pay you to look to Udylite. Call in your Udylite Technical Man today and let him tell you the complete story. Or write to The Udylite Corporation, Detroit 11, Michigan. *There's no obligation.*

THE *Udylite* CORPORATION
DETROIT 11, MICHIGAN

PIONEER OF A BETTER WAY IN PLATING

a nonilluminating handle and a metal tripod.

Lens system magnifies five times and is highly corrected to eliminate spherical and chromatic aberration and distortion. It has a wide, flat field.

Moves Heavy Drums

USE REPLY CARD—CIRCLE No. 8

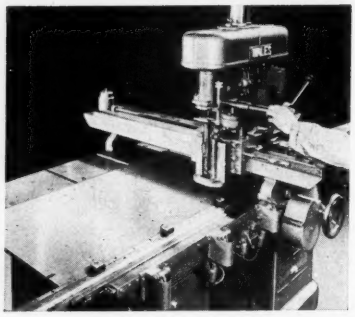
If you have trouble moving full drums around the plant, the new Drumobile may help. It's a product of Kist Machine Co. Inc., 1001 E. Ferry St., Buffalo 11, N. Y.

Unit will safely lift full drums with cover removed and transport from place to place. To pick up the drum the unit is simply moved around the drum and the handle is pushed down. Units will handle up to 850 pounds.

Heavy-Duty Drilling Machine

USE REPLY CARD—CIRCLE No. 9

Drilling machine for boring plus precision layout, drilling and reaming of holes is announced by Wales-Strippit Corp., N. Tonawanda, N. Y. Machine is equipped with a heavy boring head and tooling permits boring holes up to 5 inches diameter. Precision-built boring head with antifriction bearings is



. . . handles boring plus precision alignment

equipped with an adjustable guide support that is moved down close to top of the work for accuracy during drilling and reaming operations.

Extra large bearing area on the boring head assembly base assures travel at exactly 90 degrees on two accurately ground ways across a solid bridge. Full-size table provides support for work. Antifriction ball inserts located over the entire table area provide easier work movement. Two-speed gearing, controlled by handwheels, provides rapid traverse for rough positioning and two of the company's built-in Scan-A-Scales zero in the work to tolerances as close as 0.0001-inch. Two sets of steel drawers are located in the base for holding boring tools, drills, reamers and accessories. Leveling screws compensate for uneven floors.

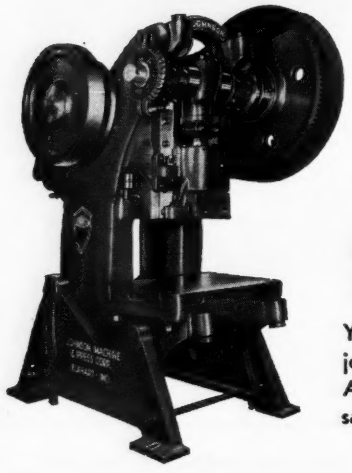
Self-Contained Dumbwaiter

USE REPLY CARD—CIRCLE No. 10

Vertical conveying of parts between floors can be facilitated with the new power-driven dumbwaiter developed by Sage Equipment Co., 30 Essex St., Buffalo 13, N. Y.

Unit is self-contained, compact and is available with fully automatic pushbutton control stations. Standard cab is 3 x 3 x 4 feet and can be equipped to meet specific requirements. For example cabs may be equipped with removable

JOHNSON Bonus Built
POWER PRESSES



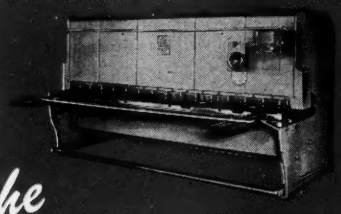
15 MODELS
CAPACITIES OF
16 to 90 Tons

RUGGED
DEPENDABLE
TIME-TESTED

You can handle larger jobs on smaller presses. Ask about the extra safety features.

Write for Bulletin 52 . . . a complete description of all Johnson's 14 models. Request data sheet on the Hydra-Shear.

NEW . . . DIFFERENT . . . AND BETTER for real production shearing



the HYDRA-SHEAR
to handle up to 10 gauge in 6' - 8' - 10' lengths. No gears or clutch . . . Overload hazards eliminated . . . Lessens curl and burring.

Johnson Machine and Press Corp.
620 W. INDIANA AVE. ELKHART, INDIANA

SLASH DOWN-TIME FOR HOT REPAIRS WITH PERMANENTE 84!

DON'T let excessive down-time for hot repairs prevent you from getting maximum production from your open hearth or electric steel furnace.

Slash down-time to a minimum with patented Permanente 84 *periclase* ramming and patching mix—and increase your ingot production per year.

Because Permanente 84 is dependable and easy to use, *faster hot repair* is possible. And because it gives superior bottom performance, *fewer repairs* are required between heats. Here's why:

Permanente 84 is processed from high-purity sea water magnesia—gives an unbeatable combination of high refractoriness and chemical resistance. Its high density and chemical purity minimize penetration of slag and metals.

Get Permanente 84 *now* for open hearth and electric furnace rebuilds as well as for bottom, bank and tap hole maintenance.

YOUR Kaiser refractory engineer will give prompt attention to your refractory problem—will offer, where desired, research, design and installation service to give you maximum production most economically. Write for descriptive literature on Permanente 84 and the companion ramming mix, Permanente 165. Principal sales offices: *Chemical Division*, Kaiser Aluminum & Chemical Sales, Inc., 1924 Broadway, Oakland 12, California. First National Tower, Akron 8, Ohio.

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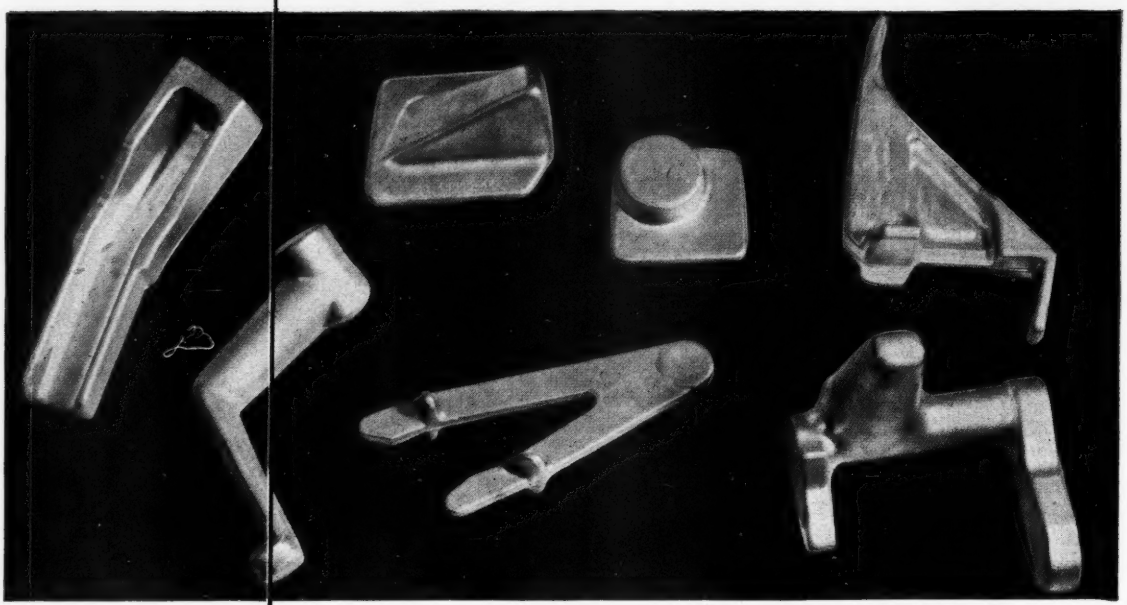
ALUMINUM FORGINGS

Plenty of Strength, Easy to Finish and what a Saving in Weight!

Where weight is a factor, particularly in moving assemblies, Mueller Brass Co. forged aluminum parts often can improve the performance of your products, because they possess approximately the same strength as steel but are only ⅓ the weight. Mueller Brass Co. aluminum forgings are ideal for high speed rotating or oscillating machines because they reduce vibration and bearing loads and thus cause less wear on other parts. They are strongest at the points of greatest stress because their grain structure, during the forging operation, can be controlled. These forgings can be produced in relatively complicated shapes to tolerances closer than sand castings. The smooth, bright surfaces eliminate costly finishing and save machining time. The Mueller Brass Co. can supply aluminum forgings to your specifications in any of the standard or special alloys.

Write us today for complete information.



83

Typical forged aluminum parts produced by Mueller Brass Co. for some of the nation's leading aircraft manufacturers.

MUELLER BRASS CO.

PORT HURON 19, MICHIGAN

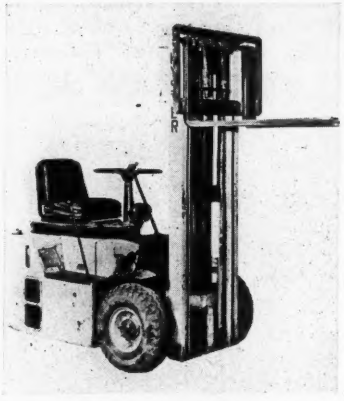
shelves or with a roller bed.

Standard dumbwaiter has a load capacity of 500 pounds.

Truck Uprights Redesigned

USE REPLY CARD—CIRCLE No. 11

Free-lift upright for its model 20 lift truck, designed to elevate the load without increase in overall height, is offered by Hyster Co., 2902 N. E. Clackamas St., Portland, Oreg. Uprights show advantages where there is a minimum



. . . load elevation without height increase

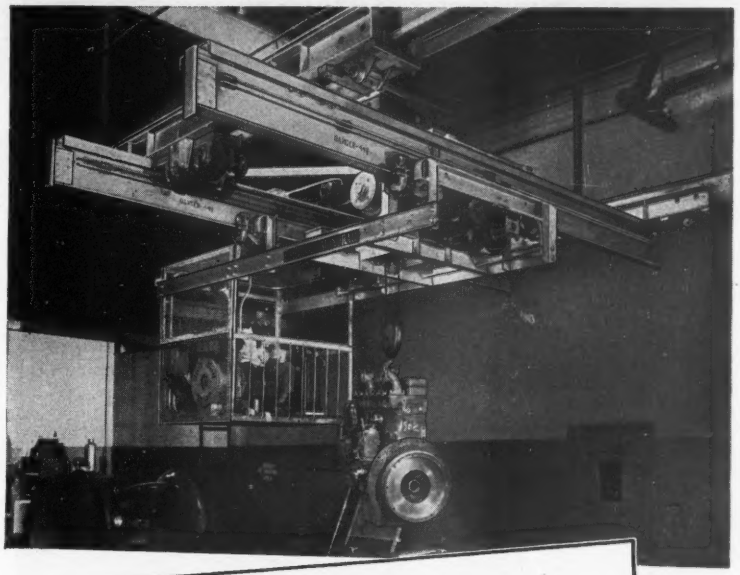
overhead clearance and where the inner upright of a standard model would strike obstructions before the load could be elevated to the desired stacking height. Typical applications include loading or unloading box cars and van trucks and working under low doorways, ceilings and balconies.

Free-lift upright assemblies are available in 7-foot 8-inch and 9-foot 8-inch lift heights. Uprights with higher lifts are also available on special order.

Jolt, Squeeze Pin-Lift

USE REPLY CARD—CIRCLE No. 12

Concentric draw design with a single, large-diameter concentric draw cylinder makes two jolt squeeze pin-lift molding machine models the fastest ever produced by Johnston & Jennings Co., division of Pettibone Mulliken Corp., 2424 N. Cicero Ave., Chicago 39, Ill. The jolt cylinder is internally ported; exhaust blows the jolt anvil clean on every stroke. A knee-valve controls the jolt and a single hand-valve controls squeeze and draw on the model 513-6. Two



here's the crane for . . .

CONSTANT SERVICE at HIGH SPEED

If your handling operations must be "on the go—all the time—and fast" then investigate this American MonoRail Crane. With constant service at high speed, it offers the advantages of rugged construction, low-cost operation and quick installation.

The big reason is articulated trolleys. Each trolley wheel carries its share of the load in perfect alignment with the craneway tracks. All possible friction is eliminated. The result is perfectly articulated trolley travel. Articulated trolleys permit operating speeds of 500 feet per minute under constant service.

SEND FOR BULLETIN C-1

THE AMERICAN MONORAIL COMPANY

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Proved!..

ON RUN-OUT TABLES TOO..

LOVEJOY L-R FLEXIBLE COUPLINGS

THREE YEAR MAINTENANCE-FREE SERVICE RECORDS

Eliminate costly shut-downs and break-downs due to coupling failures on run-out tables and other equipment with Lovejoy Flexible Couplings. They are designed to correct mis-alignment without vibration, backlash or surge. Free-floating load cushions are suspended between heavy metal jaws. No shut-downs for changing cushions, which last two to five years. No lubrication ever needed.

WRITE FOR COMPLETE CATALOG AND QUICK-FINDING SELECTOR CHARTS

LOVEJOY FLEXIBLE COUPLING CO.

5071 WEST LAKE STREET CHICAGO 44, ILLINOIS

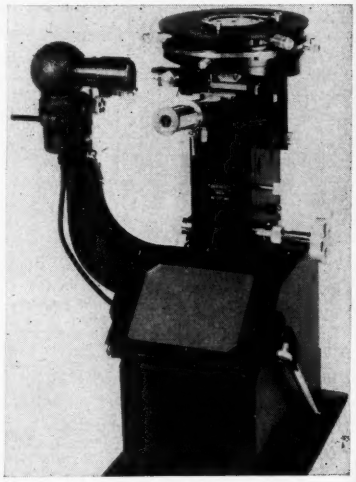
pilot valves control all operations of the model 716-8, including the air-actuated swinghead.

Squeeze platen is quickly adjustable for different height flasks. Lift pins can be adjusted for a wide range of flask sizes. Model 513-6 provides 6-inch draw; 716-8 provides 8-inch draw.

Universal Camera Microscope

USE REPLY CARD—CIRCLE No. 13

William J. Hacker & Co. Inc., 82 Beaver St., New York 5, N. Y., is introducing its universal camera microscope, the model MeF. The unit is readily adapted to all methods of examination and is said to



. . . perpendicular alignment is automatic

be almost immune to vibration. Magnifications range from 4.5 to 2200 times. When placed on the stage, specimen's perpendicular allignment to optical axis is automatic. Observation is direct through eyepiece tube or on ground glass screen.

Among accessories are a micro hardness tester, binocular eyepiece attachment and arc lamp illumination.

Rubber Pump Moves Acids

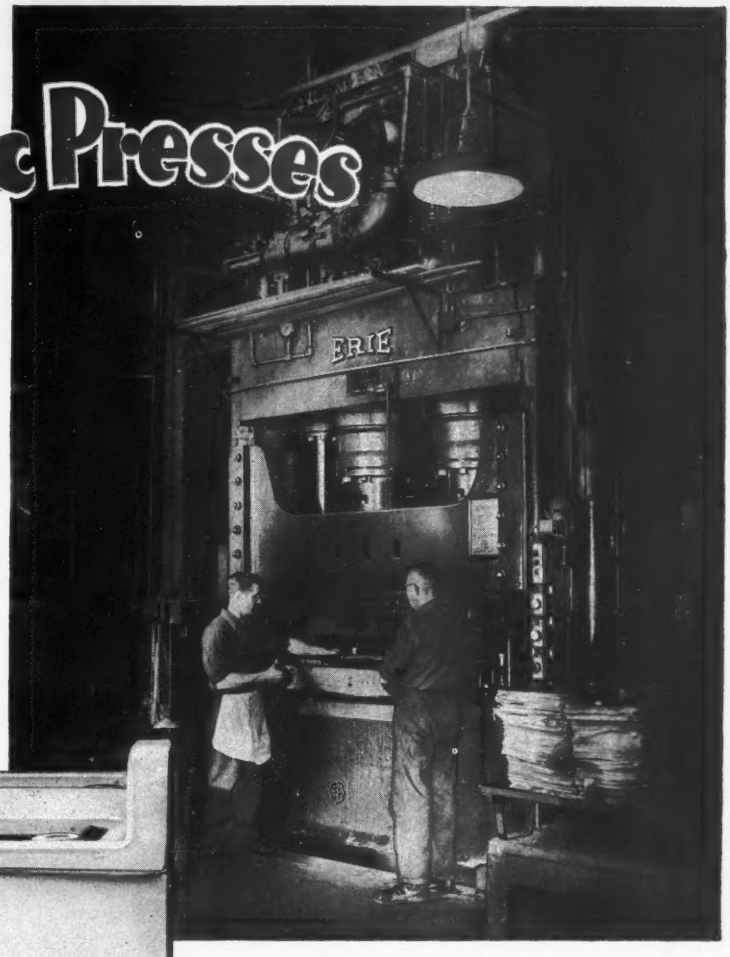
USE REPLY CARD—CIRCLE No. 14

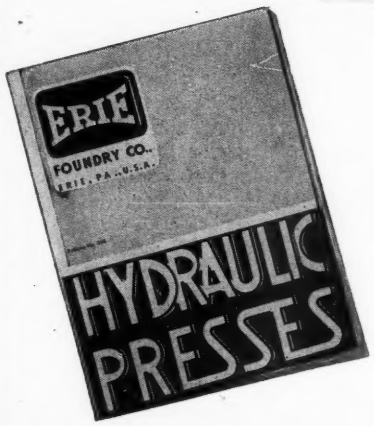
New hard rubber impeller pump for handling acids, alkalies and other corrosives at moderate cost is announced by American Hard Rubber Co., 93 Worth St., New York 13, N. Y.

Nominally only ¾-inch in size, the pump delivers 15 gpm at 22-

Hydraulic Presses

for
the JOB
you have to do . . .
by
ERIE FOUNDRY COMPANY
OF COURSE





335 TON FAST ACTION HYDRAULIC PRESS . . .

AT ODIN STOVE MANUFACTURING CO.

THIS Erie Foundry Company Hydraulic Press is typical of the diversity of design and construction available to you in selecting presses best suited to your product. It is forming the smooth, well contoured parts of the famous Odin Beautyrange. Bulletin 350 gives you a clear idea of our ability to meet your hydraulic press requirements. Your copy is ready to be mailed on request.

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foot head, or 5 gpm at 72-foot head. It pumps viscous or thin liquids. Self priming, it will start instantly against suction lifts of 6 feet without a foot valve.

Automatic Booster Gun

USE REPLY CARD—CIRCLE No. 15

Complete range of pressures up to 10,000 psi is available with an automatic booster gun offered by Lincoln Engineering Co., 5788 Natural Bridge Ave., St. Louis 20, Mo. Gun is designed for lubrication of bearings on industrial machinery requiring injection of a small quantity of lubricant at extremely high pressure. Other applications include those for an auxiliary high pressure lubricator to service bearings requiring injections requiring limited quantities of special purpose lubricant.

The gun can be used for cracking frozen or clogged bearings on contractors' equipment without use of power-operated guns. Unit can be refueled by engaging the filler fitting with a control valve on the hose from a power or manually-operated pump.

Portable Handling Cart

USE REPLY CARD—CIRCLE No. 16

Versatile handling cart made for applications in the stock room, tool crib, for maintenance or as a machine tender, is announced by Shure Mfg. Corp., 1601 S. Hanley Rd., St. Louis, Mo. Called the Scotty Mobin, the cart has a 4-inch deep top tray, plus one shelf 1-inch deep. Ample space is provided for one or two additional shelves. Portability is gained by use of 3-inch rubber-tired swivel casters. Overall height is 33¼ inches; width, 18 inches; and length, 29 inches.

. . . applicable throughout the plant

Resin-Base Finish

USE REPLY CARD—CIRCLE No. 17

Nu-Pon A, a resin-base finish that is applied with spray guns, is reported by Glidden Co., Cleveland, O. For exterior metal finishing, it resists the attacks of chemicals, corrosion and moisture.

Coatings Protect Metal

USE REPLY CARD—CIRCLE No. 18

Markal Co., Chicago, Ill., introduces two protective coatings for metal. S-R heatproof coating protects metals from 0 to 1850° F against scaling and corrosion. It is for use on furnaces, furnace doors, stokers, exhausts, etc. D-A coating will withstand corrosive conditions caused by steam, hot water, salt spray, hot acids and mild alkalies at temperatures from 0 to 600° F. It is used to protect kettles and drums where chemicals and acids are stored and steel

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SUPERIOR LADLE BRICK

Here is a plain statement without any frills: you can increase your melting capacity if you use GLOBE SUPERIOR LADLE BRICK. This statement has to be proved, of course, before it can be accepted at face value. Well, it's proved every day in steel plants all over the country. Here's how it works: the labor and materials used for refractory replacement are a terrific drag on production time. The excellent quality of GLOBE SUPERIOR LADLE BRICK, wire cut or dry pressed, makes it last longer. By lasting longer, it salvages much of the time lost in refractory replacement. The result, of course, is increased melting capacity. Let us help you select the right type of GLOBE SUPERIOR LADLE BRICK for your particular needs. You'll find it quite profitable.

SERVING THE STEEL INDUSTRY SINCE 1873

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SEE WHAT *They* SAY ABOUT

Giffels & Vallet

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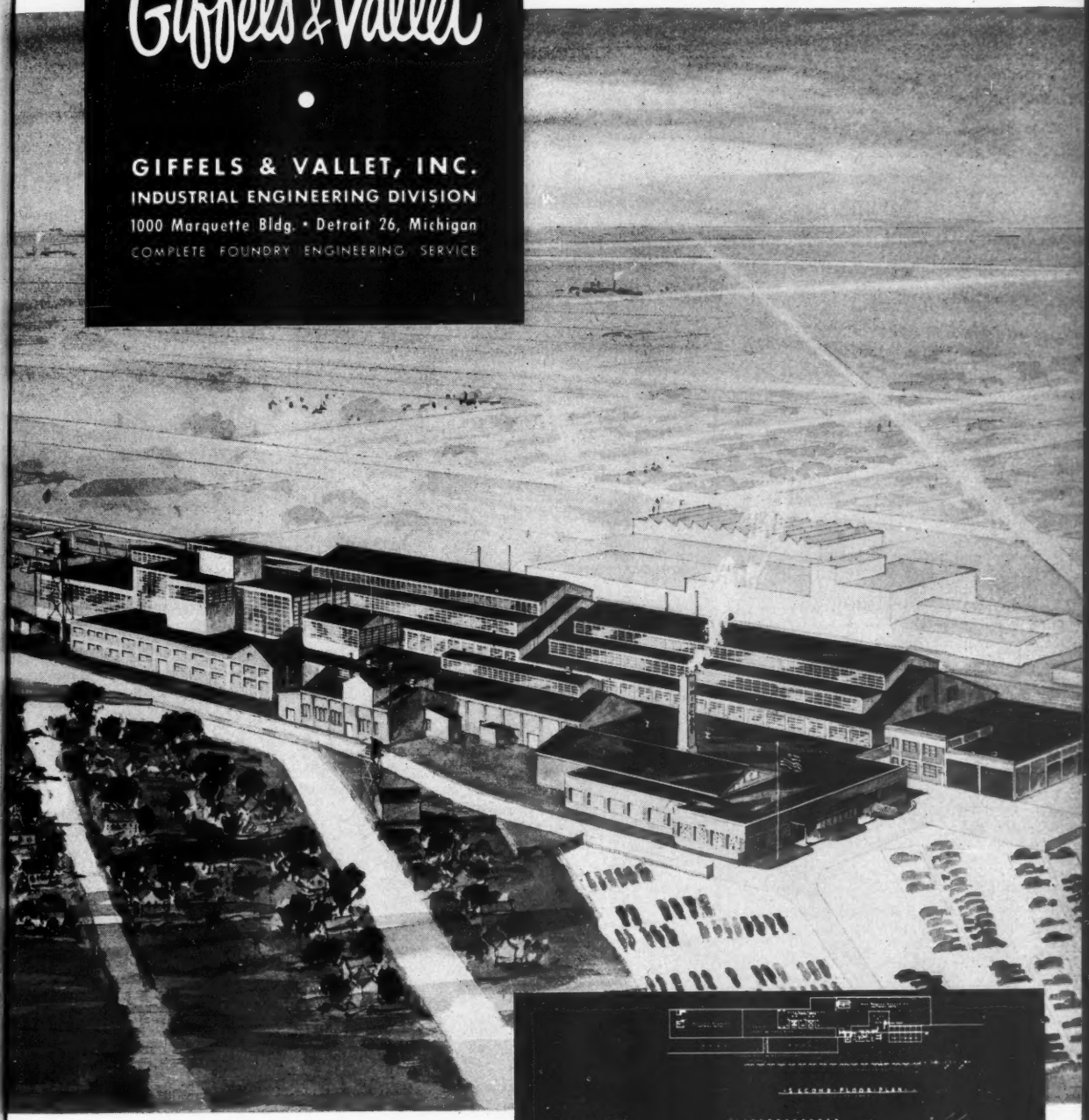
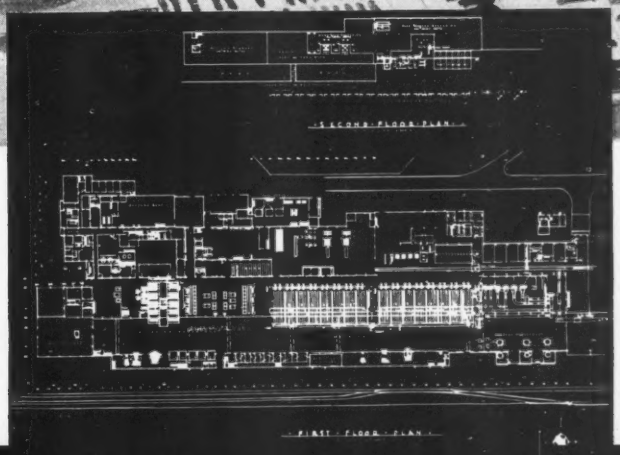
COMPLETE FOUNDRY ENGINEERING SERVICE





UNITCAST CORPORATION,
Toledo, Ohio

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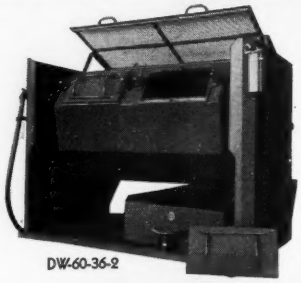
put your precision finishing on a mass production basis

SAVE MANHOURS AND MONEY . . . the original Roto-Finish processes completely eliminate hand finishing in most instances. GET ABSOLUTE UNIFORMITY . . . in any quantity. MAINTAIN exact tolerance on precision parts. CUT FINISHING costs as much as 80% . . . this fact has been proved many times in actual installations. LOWER INITIAL AND MAINTENANCE costs . . . you need only one Roto-Finish machine to replace several manual grinding or polishing machines. No exhaust system is ever required.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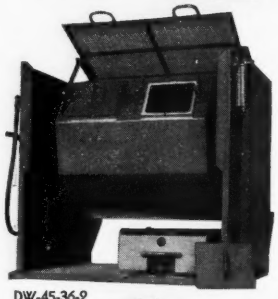
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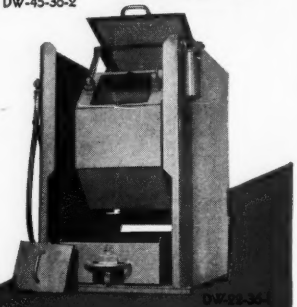

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Send a few unfinished parts to us . . . plus a finished part for a guide, (or we'll be glad to pick them up from your plant) for a "no charge" demonstration. Then sit back and let us *prove* that Roto-Finish will finish your parts . . . to your specifications . . . and save you time and money. We *guarantee* that you can get the same results in your plant that we produce in our laboratory. *There is no obligation for this service.*

Write for fact-packed Roto-Finish Catalog for complete information.

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parts exposed to chemical or acid fumes.

Three-Jaw Universal Chuck

USE REPLY CARD—CIRCLE No. 19

No. 6907 6-inch, three-jaw universal chuck with threaded body back for direct mounting on lathes, milling machines, grinders and other machine tools with 2¼-inch-8 spindles, is available from Westcott Chuck Co., Oneida, N. Y. No adapter is required, therefore, chuck is mounted close to spindle bearing.

Quick Drying Floor Compound

USE REPLY CARD—CIRCLE No. 20

Rezilo, a quick drying plastic flooring compound for repairing and resurfacing wooden floors is announced by Monroe Co. Inc., Cleveland, O. It contains cohesive resins that bind it firmly to wooden floor surfaces without use of metal binders. It is easily applied and can be used immediately after application.

Portable Stacking Racks

USE REPLY CARD—CIRCLE No. 21

Standard portable stacking type stock racks, made by Equipment Mfg. Co. Inc., Detroit 5, Mich., are equipped with bayonet cutouts in uprights for attaching side rails. Both flush and extended type rails are available.

Liquid Fixer Chemical

USE REPLY CARD—CIRCLE No. 22

X-Ray Department, General Electric Co., Milwaukee, Wis., has developed a liquid fixer chemical that is stainless. Known as Supermix—stainless type, it will process about 1300 square inches more film per gallon at 100 per cent exhaustion than powders.

Valve Is Pressure Operated

USE REPLY CARD—CIRCLE No. 23

Series BB 4-way valve, introduced by Hannifin Corp., Chicago 24, Ill., is two series B 3-way Pilot-Master valves in one compact common body with internal coring so arranged that one valve operates normally closed while the other operates normally open. Two valves shift simultaneously when pressure is introduced into the chamber over two piston-poppets, and

Rings by King . . . here they are! This collection of rings includes bands, flanges, leg-in and leg-out channels. Make King your ring department. Phone, wire or write for catalog, capacity charts, detailed information.
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heavy-
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LOW MAINTENANCE, OPERATING COST
This new design offers greater end-cutting strength and blade support. Blade mounting provides cutting rigidity equivalent to solid flute design, plus extended life through replaceable blades.
AVAILABLE FROM STOCK FOR IMMEDIATE SERVICE
BARBER-COLMAN COMPANY
989 ROCK STREET
ROCKFORD, ILLINOIS

pressure within valve returns both piston-poppets to their normal position when pilot pressure is released.

Hand Bar Speed Knobs

USE REPLY CARD—CIRCLE No. 24

Jergens Tool Specialty Co., Cleveland, O., offers hand bar speed knobs. They are made with four metal prongs to provide greater tightening and clamping action by inserting a spanner or wrench handle between prongs.

Knee-Action Caster

USE REPLY CARD—CIRCLE No. 25

Clark Duoflex caster, available from All Steel Welded Truck Co., Rockford, Ill., is a knee-action, shock-absorbing caster. It may be used to replace present wheeled equipment. It has lifetime lubrication and there is only one moving part.

Cup Grinding Wheel

USE REPLY CARD—CIRCLE No. 26

Royalite hard-shell cup wheel, introduced by United States Rubber Co., New York 20, N. Y., retains its sharp cutting edge throughout its service life. It has a hard shell of tough resin-bonded abrasive built around a core of rapid cutting resin abrasive construction. Shell resists mushrooming or rounding of wheel's cutting edge.

Automatic Gas Cutoff Valve

USE REPLY CARD—CIRCLE No. 27

Kelly-Byrne positive safety valve, designed for use with natural and manufactured gas, is placed on a building's gas supply line in front of the gas meter. In event of a fire, a fusible link, made of Goodrich Geon 404 plastic, distorts at approximately 165° F, forcing a tension spring to close the valve which will prevent dis-

USE A
REPLY CARD
Just circle the corresponding number of any item in this section for more information.

Yours FOR THE ASKING

TEAR OUT CARD, FILL IN and MAIL TODAY!

70. Copy Production

Charles Bruning Co.—Described as the ideal machine for moderate copy production in drafting rooms and for business offices, the model 30 Copyflex is presented in 4-page illustrated bulletin A-2030. Full 46-in. printing width allows use of standard 42-in. wide roll stock or for multiple cut sheets side-by-side. Copies are produced at speeds up to 12 linear feet per minute.

71. Cooling & Exhaust Fans

Manufacturers Equipment Co.—Five types of 30 to 48-in. portable fans and twenty models of 27 to 72-in. exhaust fans are described in 4-page illustrated bullentin No. 100. Capacities range from 6250 to 140,000 cfm per minute. Static pressures handled by exhaust fans are ⅛ to 2 in.

72. Industrial Television

Diamond Power Specialty Corp.—Features, advantages and typical uses of model 300-B Utiliscope wired television are set forth in 4-page illustrated bulletin 1025-A. Technical data on the three units of the system (monitor, camera, power unit) with combined weight of 133 lb are given. With this device you can see where you can't look.

73. Weldments & Castings

Acme Tank & Welding Div., United Tool & Die Co.—Basic facts about steel plate fabrication as compared with castings are presented in 24-page illustrated booklet "The Facts About Weldments and Castings." Much data are in tabular form. If you specify castings, this booklet is a "must".

74. Link V-Belts

Brammer Corp. — Endless V-belts in any length can be made up by the Brammer V-Link system. Only four coils of this detachable link belting are required to replace 315 standard sizes of endless V-belts. They are available in ⅜ to 1¼-in. sizes on up to 100-ft reels. Full details are given in 6-page illustrated folder "Tomorrow's V-Link Belting Today."

75. Foundry Equipment

C. O. Bartlett & Snow Co.—52-page illustrated "Foundry Book" catalog N. 104 uses many, many photographs to show installations of various types of equipment made by the company. It is divided into sections covering core room, foundry, cleaning room and miscellaneous systems.

76. Vise Choices

Desmond-Stephan Mfg. Co.—In 24-page catalog 60 are featured illustrations of complete line of Desmond-Simplex industrial, woodworkers and home utility vises with full information on each item. Identification of models and sizes facilitates ordering. Repair parts are completely listed as well.

77. Box Merchandising

Hinde & Dauch Paper Co.—24-page pocket-size issue No. 3 of the Little Packaging Library tells you "How to Merchandise with Corrugated Boxes." Featured are ten merchandising jobs currugated boxes can do for you. Also considered are points to consider in planning a package, show packaging, display and protection to the product.

78. Mechanical Tubing

Babcock & Wilcox Co., Tubular Products Div.—Advantages accruing to manufacturers through use of tubing in production of hollow precision parts are set forth in 4-page illustrated bulletin TB 339. Tolerance tables and mechanical properties of each type of tubing are included.

STEEL 9-22-52
Penton Building, Cleveland 13, Ohio

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79. Rolling Mills

E. W. Bliss Co. — In the 52 pages of bulletin No. 40 you will find a multitude of illustrations, applications, tables and general data on Bliss rolling mills and accessories. Equipment for ferrous and nonferrous plants producing solids, shapes, sheet, strip and foil is included. A handy handbook!

80. Tachometers

Metron Instrument Co.—Principle of operation, applications, and suggested circuits are some of the subjects covered by 4-page illustrated bulletin T4 on hand, portable and fixed-installation type tachometers. Speeds up to 100,000 rpm can be checked.

81. Dust & Fume Control

American Wheelabrator & Equipment Corp.—A new periodical devoted to news of how Dustube cloth tube dust collectors are handling various dust and fume control problems throughout industry is being published. The illustrated bulletin is called "Dust & Fume Topics."

82. Foundry Mechanization

Link-Belt Co.—The answers to the question, "How can a foundry be mechanized for increased production, better castings and improved working conditions?" are provided in 36-page illustrated book 2439. Presented are selection of actual case histories, foundry layout drawings and installation pictures.

83. Neoprene Connectors

Joy Mfg. Co.—Described and illustrated in 4-page bulletin B41 are one-piece Neoprene connectors for heavy industrial applications. Plugs and receptables are shatterproof, watertight and resistant to sunlight, oils and acid.

84. Altitude Control Valves

Golden Anderson Valve Specialty Co.—16-page illustrated bulletin W-4 deals with line of single and double acting altitude control valves. In addition to specifications maintenance data are given.

85. Muffle Furnace

Hevi Duty Electric Co.—Multiple unit muffle furnaces in 1150 to 3400-watt sizes are described in 4-page illustrated bulletin LAB-849. Furnaces are designed for drying, heating, heat treatment, baking and other industrial or laboratory uses.

86. Electronic Heating Unit

Lewis Machine Co.—Uses and operation of Lewis 1500 electronic high frequency heating unit for soldering, brazing, annealing and other controlled heat applications are outlined in illustrated brochure. Specifications and cutaway photos are included.

EDITORIAL REPRINTS:

87. Induction Heating

Improved productivity, heat control and die life are benefits realized at Chevrolet's Saginaw Transmission Div. by converting to induction heating for forging of transmission gears. Read all about it in STEEL reprint "High-Geared Production with Induction Heating."

88. Forging Die Repair

A. L. Phillips of Eutectic Welding Alloys Corp. effectively describes process by which forging die life is extended through build-up welding instead of shaving and resinking in STEEL reprint "Welding Doubles Life of Forging Dies." Not only is die life doubled, but costs are halved with elimination of resinking labor, less down time and reducing milling cutter wear and breakage.

89. Drawing Titanium

Studies with commercially pure titanium indicate that the metal can be cold-formed under proper conditions, although existing titanium alloys are not suitable for deep drawing. C. C. Higgings, in STEEL, reprint "Titanium: It Can Be Formed and Drawn," discusses metal's properties, drawing pressures needed and possible drawing lubricants.

90. Strip Mill Ideas

"Wide Strip Mill Opens World of New Ideas" is STEEL reprint of article by F. H. Fanning, Armco Steel Corp., which recounts the impact of 4-high continuous hot and cold mills on conventional hand-operated sheet mills. Rapid displacement of obsolete equipment and improved working conditions were among results.

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6	16	26	36	46	56	66	76	86
7	17	27	37	47	57	67	77	87
8	18	28	38	48	58	68	78	88
9	19	29	39	49	59	69	79	89
10	20	30	40	50	60	70	80	90

STEEL 9-22-52
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charge of gas from a melted gas meter. Valve is available from Kelly Safety Device Co., Cleveland, O.

Improved Box Wrenches

USE REPLY CARD—CIRCLE No. 28

Head walls of structural box and offset striking-face box wrenches have been reproportioned by J. H. Williams & Co., Buffalo 7, N. Y. Thinner head walls permit use of wrenches on broader range of American Standard bolted flanges and flanged couplings.

Hydraulic Torque Converters

USE REPLY CARD—CIRCLE No. 29

Torcon Corp., Ashtabula, O., offers hydraulic torque converters with 11, 13, 14, 15, 16, 17, 18, 19, 24 and 26-inch wheel diameters. The single-stage, three-element type converters are automatic hydraulic transmissions featuring variable speed and torque ratios. They combine a hydraulic torque converter and hydraulic coupling in a single unit.

Phenolic Core Bonding Resin

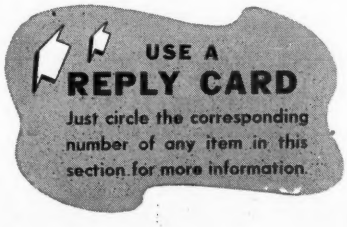
USE REPLY CARD—CIRCLE No. 30

Powdered phenolic core bonding resin for curing in dielectric ovens has been developed by Borden Co., New York, N. Y. Known as Thor plastic binder FB-111, it responds well to temperatures characteristic of dielectric core ovens and imparts green strength to uncured core.

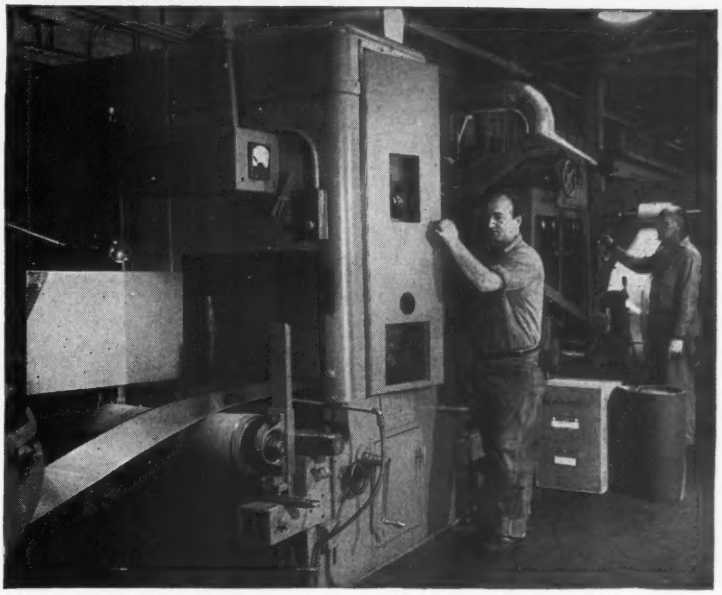
Machine Screw Taps

USE REPLY CARD—CIRCLE No. 31

Hy-Pro Tool Co., New Bedford, Mass., offers machine screw taps for special work requiring oversize taps and taps with stronger type spiral point. In addition, each type is specifically designed to handle a particular threading requirement. They are available in standard sizes.



Manufacturer Cuts Costs 50%



with Jewel Brand Coated Abrasives

"Waste Barrel" Test Proves Profitable

Aided by the recommendations of Jewel Brand Abrasive Engineers, a prominent manufacturer now reports a record-breaking 50% production saving on the grinding and polishing of cold rolled stainless steel strip. Based on tests of used abrasive belt samples taken from plant waste barrels, the proper selection of longer-wearing, faster-cutting, Jewel Brand resin bonded belts has resulted in increased productivity at greatly reduced costs.

This could be your plant, your department, *your saving!* Make the easy, profitable "waste barrel" test now. Given a letter-size sample (including the joint if possible) of a used belt taken from your waste barrel, Jewel Brand Engineers usually can recommend a Jewel Brand Belt that will help you do a better job, faster, and *for less money.* You are under no obligation of any kind at any time. Simply fill in the coupon and send with used belt sample.

ABRASIVE PRODUCTS, INC.
511 Pearl Street
South Braintree 85, Mass.

HELP me complete the Waste Barrel Test!
Enclosed is a sample of used belt from our plant.

NAME_____

POSITION_____

COMPANY_____

ADDRESS_____

TYPE OF PRODUCT_____ MATERIAL_____

WE USE APPROXIMATELY_____ BELTS PER MONTH_____

BELT LENGTH_____ BELT WIDTH_____

For the Purchase or Sale of Iron and Steel Scrap . . .

CONSULT OUR NEAREST OFFICE

The energy and integrity of our organization is ready to serve your best interests . . .
Since 1889, Luria Brothers & Company, Inc. have made fair dealings their constant aim.

CONSULT OUR NEAREST OFFICE FOR THE PURCHASE AND SALE OF SCRAP

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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

The Market Outlook

STEEL should be more plentiful in the first quarter of next year than in any recent quarter.

Don't let government reports of first-quarter allotments lead you to believe there will be less. NPA announced that first-quarter allotments for civilian goods would be only 60 per cent of the third quarter of 1952. Technically that's true, but that isn't the whole story. First-quarter allotments are being held that low so orders carried over from fourth quarter can be filled. Producers of civilian-type goods should get what they are allotted for the first quarter, plus what is due them from fourth quarter.

The military's first-quarter allotments will be about the same as those of the third quarter but the military will have no carryover tonnage coming. All of its back orders will be filled before then.

RECORD BOUND— When the first quarter is over it probably will be found that total steel shipments that period were greater than in any previous three months. Steel capacity will have reached a record high by that time. A survey by STEEL shows steelmaking annual capacity by next Jan. 1 will be 6.3 million net tons greater than on last July 1. Gain from Jan. 1, 1952, to Jan. 1, 1953, will be 7 million tons. This gain is somewhat less than had been expected. There was interference from the steelworkers' strike, labor troubles among construction workers, shortages of materials and bad weather early in the year.

UP AND UP— Steelmaking capacity on next Jan. 1 will be around 115.6 million net tons but enough additional facilities are to come in after then to boost the figure in 1953 to around 120 million tons. This is somewhat below what had been expected, for economic considerations caused some expansion plans to be scaled down or dropped.

MORE IRON AND COKE— In support of the growth of steelmaking capacity, the nation's blast furnace and coke making capacities are being expanded. Blast furnaces, suppliers of pig iron to the steel plants and foundries, will show a 5.6-million-ton increase on Jan. 1, 1953, over Jan. 1, 1952. Capacity next Jan. 1 will be 79 million tons and expansions to be completed after that date will boost it to 82.7 million tons.

Coal chemical recovery ovens, suppliers of coke to fuel the blast furnaces and foundries, will have a capacity of 67.9 million tons on Jan. 1, 1953, a 4.7-million-ton gain over Jan. 1, 1952. Another 1.5 million tons will come in after next Jan. 1.

FULL SPEED— The steel industry not only is increasing its capacity but it's operating it at full tilt. In the week ended Sept. 20, production of steel for ingots and castings was at a rate of 102 per cent of capacity. That's 1 point above the preceding week.

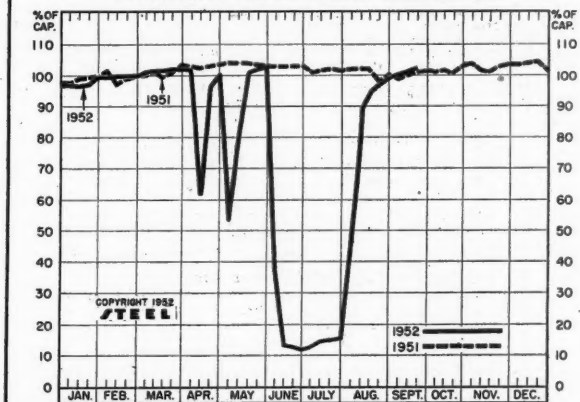
IN DEMAND— Demand for finished steel continues strong, although there are signs headway is being made in catching up with it. Conversion steel as a supplement to regular supplies of steel is losing some of its appeal. Small diameter bars are easier to obtain, and hot-rolled strip is moving in better volume to warehouses.

Large hot-rolled and cold-finished carbon bars continue to stand out as items in tight supply. They'll be among the last products to ease up. Some openings exist for December delivery of stainless bars.

A RISING SUN— Sheet and strip producers are receiving more orders than they expected, although users of narrow cold-rolled strip can place orders for low and high carbon grades for as early as late November shipment. On the West Coast, deliveries of Japanese galvanized sheet are being made through brokers at $35 a ton more than those of domestic mills. Quality is said to vary from inferior to excellent. Indicative of Japanese steel activity are reports that contracts are pending for export of 1 million tons of iron ore from Vancouver Island, B. C., to Japan.

Heavy and wide plates rank along with large bars as a tight supply item. Some plate users have closed down because of a lack of material.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended Sept. 20	Change	Same Week 1951	Same Week 1950
Pittsburgh	101	+ 2.5*	99	102
Chicago	105	+ 1*	105	103
Mid-Atlantic	98	0	100	99
Youngstown	105	— 1	105	105
Wheeling	98	+ 3	97	98
Cleveland	107	+ 2.5*	100.5	100
Buffalo	104.5	0	104	104
Birmingham	100	0	90	100
New England	82	— 3	82	93
Cincinnati	94	+ 3	100	103
St. Louis	101	0	93	81
Detroit	106	+ 1*	106	102
Western	103	+ 3	103	103
Estimated national rate	102	+ 1	101	101

Based on weekly steelmaking capacity of 2,077,040 tons in 1952; 1,999,034 tons for 1951; 1,928,721 tons for second half, 1950; 1,906,268 tons for first half, 1950.

* Change from revised rate for preceding week.

The Metalworking Outlook—p. 73 Production-Engineering News—p. 109

Composite Market Averages

FINISHED STEEL PRICE INDEX: Bureau of Labor Statistics	Sept. 16, 1952	Sept. 9, 1952	Month Ago	August Average
(1947-1949)=100	130.8	130.8	130.8	130.8

AVERAGE PRICES (BUREAU OF LABOR STATISTICS)
Week Ended Sept. 16, 1952

Units are 100 lb except where otherwise noted below in parentheses. For complete description of products see insert following p. 28, STEEL, Sept. 8, 1952.

Rails	$3.775	Sheets, C.R. carbon	$5.275
Track spikes	6.650	Sheets, galv.	7.065
Track bolts	9.958	Strip, C.R. carbon	5.100
Tie plates	4.775	Strip, C.R. stainless (lb)	0.325
Joint bars	4.925	Pipe, black, buttweld (100 ft)	7.090
Plates, carbon	4.150	Pipe, galv., buttweld (100 ft)	9.106
Structural shapes	4.200	Boiler tubes (100 ft)	31.360
Bars, tool steel (lb)	1.576	Tin plate (100 lb base box)	8.950
Bars, 3120 alloy	6.575	Terne plate (100 lb base box)	7.750
Bars, stainless (lb)	0.149	Wire, carbon, merchant	6.075
Bars, carbon	4.100	Wire, fence, galv.	6.500
Bars, reinforcing	4.050	Nails (100 lb keg)	7.380
Bars, C.F. carbon	5.925	Wire, barbed (80 rod spool)	5.960
Sheets, H.R. carbon	4.125	Woven wire fence (20 rod roll)	13.810

	Sept. 18 1952	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
FINISHED STEEL PRICE INDEX, Weighted:					
Calculated by STEEL*					
Index (1935-39 av.=100)	181.40	181.40	181.40	171.92	120.39
Index in cents per lb.	4.914	4.914	4.914	4.657	3.261
ARITHMETICAL PRICE COMPOSITES:					
Calculated by STEEL*					
Finished Steel, NT	$111.66	$111.66	$111.66	$106.32	$75.41
No. 2 Fdry. Pig Iron, GT	55.04	55.04	55.04	52.54	36.59
Basic Pig Iron, GT	54.66	54.66	54.66	52.16	36.13
Malleable Pig Iron, GT	55.77	55.77	55.77	53.27	37.13
Steelmaking Scrap, GT	43.00	43.00	43.00	44.00	37.83

* For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composites, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS	Sept. 18 1952	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	3.95	3.95	3.95	3.70	2.90
Bars, H.R., Chicago	3.95	3.95	3.95	3.70	2.90
Bars, H.R., del. Philadelphia	4.502	4.502	4.502	4.223	3.28
Bars, C.F., Pittsburgh	4.925	4.925	4.925	4.55	3.55
Shapes, Std., Pittsburgh	3.85	3.85	3.85	3.65	2.80
Shapes, Std., Chicago	3.85	3.85	3.85	3.65	2.80
Shapes, del., Philadelphia	4.13	4.13	4.13	3.918	2.94
Plates, Pittsburgh	3.90	3.90	3.90	3.70	2.95
Plates, Chicago	3.90	3.90	3.90	3.70	2.95
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.15	3.15
Plates, Sparrows Point, Md.	3.90	3.90	3.90	3.70	2.95
Plates, Claymont, Del.	4.35	4.35	4.35	4.15	3.15
Sheets, H.R., Pittsburgh	3.775	3.775	3.775	3.60–75	2.80
Sheets, H.R., Chicago	3.775	3.775	3.775	3.60	2.80
Sheets, C.R., Pittsburgh	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Chicago	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Detroit	4.775	4.775	4.775	4.55	3.70
Sheets, Galv., Pittsburgh	5.075	5.075	5.075	4.80	3.90
Strip, H.R., Pittsburgh	3.75-4.00	3.75-4.00	3.75-4.00	3.75-4.00	2.80
Strip, H.R., Chicago	3.725	3.725	3.725	3.50	2.80
Strip, C.R., Pittsburgh	5.10-5.80	5.10-5.80	5.10-5.80	4.65-5.35	3.55
Strip, C.R., Chicago	5.35	5.35	5.35	4.90	3.65
Strip, C.R., Detroit	5.30-6.05	5.30-6.05	5.30-6.05	4.85-5.60	3.70
Wire, Basic, Pittsburgh	5.10-5.225	5.10-5.225	5.10-5.225	4.85-5.10	3.675
Nails, Wire, Pittsburgh	5.90-6.35	5.90-6.35	5.90-6.35	5.90-6.20	4.25
Tin plate box, Pittsburgh	$8.95	$8.95	$8.95	$8.70	$5.75
SEMIFINISHED					
Billets, forging, Pitts. (NT)	$70.50	$70.50	$70.50	$66.00	$56.50
Wire rods, ⅞-⅜", Pitts.	4.325	4.325	4.325	4.10–30	2.925
PIG IRON, Gross Ton					
Bessemer, Pitts.	$55.50	$55.50	$55.50	$53.00	$37.00
Basic, Valley	54.50	54.50	54.50	52.00	36.00
Basic, del. Phila.	59.25	59.25	59.25	56.61	38.72
No. 2 Fdry, Pitts.	55.00	55.00	55.00	52.50	36.50
No. 2 Fdry, Chicago	55.00	55.00	55.00	52.50	36.00
No. 2 Fdry, Valley	55.00	55.00	55.00	52.50	36.50
No. 2 Fdry, del. Phila.	59.75	59.75	59.75	57.11	39.22
No. 2 Fdry, Birm.	51.38	51.38	51.38	48.88	34.88
No. 2 Fdry (Birm.) del. Cin.	58.93	58.93	58.93	55.49	38.25
Malleable, Valley	55.00	55.00	55.00	52.50	36.50
Malleable, Chicago	55.00	55.00	55.00	52.50	36.50
Charcoal, Lyles, Tenn.	68.50	68.50	68.50	66.00	44.00
Ferromanganese, Etna, Pa.	228.00	228.00	228.00	188.00	140.25*

F.o.b. cars, Pittsburgh.

SCRAP, Gross Ton (including broker's commission)

No. 1 Heavy Melt, Pitts.	$44.00	$44.00	$44.00	$45.00	$38.00
No. 1 Heavy Melt, E. Pa.	41.50	41.50	41.50	43.50	36.75
No. 1 Heavy Melt, Chicago	42.50	42.50	42.50	43.50	38.75
No. 1 Heavy Melt, Valley	44.00	44.00	44.00	45.00	40.00
No. 1 Heavy Melt, Cleve.	43.00	43.00	43.00	44.00	38.25
No. 1 Heavy Melt, Buffalo	43.00	43.00	43.00	44.00	39.50
Rails, Rerolling, Chicago	52.50	52.50	52.50	52.50	46.25
No. 1 Cast, Chicago	50.00	50.00	48.50	49.00†	43.50

* Nominal. † F.o.b. shipping point.

COKE, Net Ton

Beehive, Furn, Connisvl.	$14.75	$14.75	$14.75	$14.75	$11.50-12.50
Beehive, Fdry, Connisvl.	17.00	17.00	17.00	17.50	14.00-15.00
Oven Fdry, Chicago	23.00	23.00	23.00	23.00	17.50

PIG IRON

F.o.b. furnace prices quoted under GCPR as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies published on second following page.

PIG IRON, Gross Ton	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa. B2	$56.50	$57.00	$57.50	$58.00
NewYork, del.	....	60.78	61.28	....
Newark, del.	59.52	60.02	60.52	61.02
Philadelphia, del.	59.25	59.75	60.25	60.75
Birmingham District				
AlabamaCity, Ala. R2	50.88	51.38	....	....
Birmingham R2	50.88	51.38	....	....
Birmingham S9	....	51.38	....	....
Woodward, Ala. W15	50.88	51.38	....	....
Cincinnati, del.	....	58.93	....	....
Buffalo District				
Buffalo R2	54.50	55.00	55.50	....
Buffalo H1	54.50	55.00	55.50	....
Tonawanda, N.Y. W12	54.50	55.00	55.50	....
No. Tonawanda, N.Y. T9	....	55.00	55.50	....
Boston, del.	65.15	65.65	66.15	....
Rochester, N.Y., del.	57.52	58.02	58.52	....
Syracuse, N.Y., del.	58.62	59.12	59.62	....
Chicago District				
Chicago I-3	54.50	55.00	55.00	55.50
Gary, Ind. U5	54.50	....	55.00	....
IndianaHarbor, Ind. I-2	54.50	....	55.00	....
So. Chicago, Ill. W14	54.50	55.00	55.00	....
So. Chicago, Ill. Y1	54.50	55.00	55.00	....
So. Chicago, Ill. U5	54.50	....	55.00	55.50
Milwaukee, del.	56.67	57.17	57.17	57.67
Muskegon, Mich. del.	....	61.30	61.30	....
Cleveland District				
Cleveland A7	54.50	55.00	55.00	55.50
Cleveland R2	54.50	55.00	55.00	....
Akron, O., del. from Cleve.	57.11	57.61	57.61	58.11
Lorain, O. N3	54.50	....	....	55.50
Duluth I-3	....	....	55.00	....
Erie, Pa. I-3	54.50	55.00	55.00	55.50
Everett, Mass. E1	....	59.75	60.25	....
Fontana, Calif. K1	60.50	61.00	....	....
GraniteCity, Ill. G4	56.40	56.90	57.40	....
St. Louis, del. (inc. tax)	57.15	57.65	58.15	....
Ironton, Utah C11	54.50	55.00	....	....
Geneva, Utah C11	54.50	55.00	....	....
LoneStar, Tex. L6	50.50	*51.00	51.00	....
Minnequa, Colo. C10	56.50	57.50	57.50	....
Rockwood, Tenn. T3	....	....	58.50	....
Pittsburgh District				
NevilleIsland, Pa. P6	....	55.00	55.00	55.50
Pitts., N.&S. sides, Ambridge				
Aliquippa, del.	....	56.37	56.37	56.87
McKeesRocks, del.	....	56.04	56.04	56.54
Lawrenceville, Homestead,				
Wilmerding, Monaca, del.	....	56.66	56.66	57.16
Verona, Trafford, del.	....	57.19	57.19	57.69
Brackenridge, del.	....	57.45	57.45	57.95
Bessemer, Pa. U5	54.50	....	55.00	55.50
Clairton, Rankin, So. Duquesne, Pa. U5	54.50	....	....	....
McKeesport, Pa. N3	54.50	....	....	55.50
Monessen, Pa. P7	56.50	....	....	....
Sharpsville, Pa. S6	....	....	55.00	55.50
Steelton, Pa. B2	56.50	57.00	57.50	58.00
Swedeland, Pa. A3	58.50	59.00	59.50	60.00
Toledo, O. I-3	54.50	55.00	55.00	55.50
Cincinnati, del.	59.97	60.47	....	....
Troy, N.Y. R2	56.50	57.00	57.50	58.00
Youngstown District				
Hubbard, O. Y1	54.50	55.00	55.00	....
Youngstown Y1	54.50	55.00	55.00	....
Youngstown U5	54.50	....	....	55.50
Mansfield, O., del.	59.15	59.65	59.65	60.15

* Low phos, southern grade.

PIG IRON DIFFERENTIAL

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion therof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si)

Jackson, O. G2, J1	$65.50
Buffalo H1	66.75

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls, N.Y. P15	$91.00
Keokuk, Iowa, Openhearth & Fdry, frt. allowed K2	92.50
Keokuk, OH & Fdry., 12½ lb piglets, 16% Si, frt. allowed K2	95.50
Wenatchee, Wash., OH & Fdry., frt. allowed K2	92.50

CHARCOAL PIG IRON, Gross Ton

(Low phos semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles, Tenn. T3	$68.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$59.50
Steelton, Pa. B2	62.50
Philadelphia delivered	66.05
Troy, N.Y. R2	62.50

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Semifinished and Finished Steel Products

Mill prices quoted under GCPR as reported to STEEL, Sept. 18, 1952; cents per pound except as otherwise noted. Changes shown in italics.
Code numbers following mill points indicate producing company; key on next two pages.

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 ....$81.00
Munhall,Pa. U5 .....54.00
Seattle S24 .....73.00

INGOTS, Alloy (NT)
Detroit R7 .....$57.00
Fontana,Calif. K1 ....83.00
Houston S5 .....62.00
Midland,Pa. C18 .....54.00
Munhall,Pa. U5 .....57.00
Seattle S24 .....80.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 .....$59.00
Clairton,Pa. U5 .....59.00
Ensley,Ala. T2 .....59.00
Fairfield,Ala. T2 .....59.00
Fontana,Calif. K1 ....78.00
Gary,Ind. U5 .....59.00
Johnstown,Pa. B2 .....59.00
Lackawanna,N.Y. B2 ..59.00
Munhall,Pa. U5 .....59.00
So.Chicago,Ill. U5 .....59.00
So.Duquesne,Pa. U5 ...59.00

Carbon, Forging (NT)
Bessemer,Pa. U5 .....$70.50
Buffalo R2 .....70.50
Canton,O. R2 .....70.50
Clairton,Pa. U5 .....70.50
Cleveland R2 .....70.50
Conshohocken,Pa. A3 ..77.50
Detroit R7 .....73.50
Ensley,Ala. T2 .....70.50
Fairfield,Ala. T2 .....70.50
Fontana,Calif. K1 ....89.50
Gary,Ind. U5 .....70.50
Geneva,Utah C11 .....70.50
Houston S5 .....74.00
Johnstown,Pa. B2 .....70.50
Lackawanna,N.Y. B2 ..70.50
LosAngeles B3 .....89.50
Munhall,Pa. U5 .....70.50
Seattle B3 .....89.50
So.Chicago R2,U5,W14..70.50
So.Duquesne,Pa. U5 ...70.50
So.SanFrancisco B3 ...89.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 ....$76.00
Buffalo R2 .....76.00
Canton,O. R2 .....76.00
Canton,O. T7 .....78.60
Conshohocken,Pa. A3 ..83.00
Detroit R7 .....79.00
Fontana,Calif. K1 ....95.00
Gary,Ind. U5 .....76.00
Houston S5 .....78.00
Ind.Harbor,Ind. Y1 ....76.00
Johnstown,Pa. B2 .....76.00
Lackawanna,N.Y. B2 ..76.00
LosAngeles B3 .....96.00
Massillon,O. R2 .....76.00
Midland,Pa. C18 .....70.00
Munhall,Pa. U5 .....76.00
So.Chicago R2,U5,W14..76.00
So.Duquesne,Pa. U5 ...76.00
Struthers,O. Y1 .....76.00
Warren,O. C17 .....76.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....$87.50
Canton,O. R2 .....87.50
Cleveland R2 .....87.50
Fontana,Calif. K1 ....108.50
Gary,Ind. U5 .....87.50
Massillon,O. R2 .....87.50
So.Chicago,Ill. R2 ....87.50
So.Duquesne,Pa. U5 ...87.50

SHEET BARS (NT)
Fontana,Calif. K1 (43) .$89.00

SKELP
Aliquippa,Pa. J5 .....$3.65
Munhall,Pa. U5 .....3.55
Warren,O. R2 .....3.55
Youngstown R2, U5 ....3.55

WIRE RODS
Alton,Ill. L1 .....4.70
AlabamaCity,Ala. R2 ..4.325
Buffalo W12 .....4.10
Cleveland A7 .....4.325
Donora,Pa. A7 .....4.325
Fairfield,Ala. T2 .....4.325
Fontana,Calif. K1 ....5.125
Houston S5 .....4.50
Johnstown,Pa. B2 ....4.325
Joliet,Ill. A7 .....4.325
LosAngeles B3 .....5.125
Minnequa,Colo. C10 ...4.575
Monessen,Pa. P7 .....4.30
No.Tonawanda,N.Y.B11 4.325
Pittsburg,Calif. C11 ...4.975
Portsmouth,O. P12 ....4.525
Roebling,N.J. R5 .....4.425
So.Chicago,Ill. R2 ....4.325
SparrowsPoint,Md. B2..4.425
Sterling,Ill.(1) N15 ....4.325
Struthers,O. Y1 .....4.325
Torrance,Calif. C11 ...5.125
Worcester,Mass. A7 ...4.625

SHEET STEEL PILING
Ind.Harbor,Ind. I-2 ...4.675
Lackawanna,N.Y. B2 ..4.675
Munhall,Pa. U5 .....4.675
So.Chicago,Ill. U5 .....4.675

STRUCTURALS
Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ..3.85
Aliquippa,Pa. J5 .....3.85
Bessemer,Ala. T2 .....3.85
Bethlehem,Pa. B2 .....3.90
Clairton,Pa. U5 .....3.85
Fairfield,Ala. T2 .....3.85
Fontana,Calif. K1 .....4.45
Gary,Ind. U5 .....3.85
Geneva,Utah C11 .....3.85
Houston S5 .....4.05
Ind.Harbor,Ind. I-2 ....3.85
Johnstown,Pa. B2 .....3.90
KansasCity,Mo. S5 .....4.25
Lackawanna,N.Y. B2 ..3.90
LosAngeles B3 .....4.45
Minnequa,Colo. C10 ....4.30
Munhall,Pa. U5 .....3.85
Niles,Calif.(22) P1 ....4.56
Phoenixville,Pa. P4 .....6.10
Portland,Oreg. O4 .....4.50
Seattle B3 .....4.50
So.Chicago,Ill. U5, W14.3.85
So.SanFrancisco B3 ....4.40
Torrance,Calif. C11 ....4.45
Weirton,W.Va. W6 .....4.10

Wide Flange
Bethlehem,Pa. B2 .....3.90
Clairton,Pa. U5 .....3.85
Fontana,Calif. K1 .....4.85
Lackawanna,N.Y. B2 ..3.90
Munhall,Pa. U5 .....3.85
So.Chicago,Ill. U5 .....3.85

Alloy Stand. Shapes
Clairton,Pa. U5 .....4.725
Fontana,Calif. K1 .....5.925
Gary,Ind. U5 .....4.725
Munhall,Pa. U5 .....4.725
So.Chicago,Ill. U5 .....4.725

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 .....5.80
Bessemer,Ala. T2 .....5.80
Bethlehem,Pa. B2 .....5.80
Clairton,Pa. U5 .....5.80
Fairfield,Ala. T2 .....5.80
Fontana,Calif. K1 .....6.40
Gary,Ind. U5 .....5.80
Geneva,Utah C11 .....5.80
Ind.Harbor,Ind. I-2 ....5.80
Ind.Harbor,Ind. Y1 .....6.30
Johnstown,Pa. B2 .....5.80
Lackawanna,N.Y. B2 ..5.80
LosAngeles B3 .....6.35
Munhall,Pa. U5 .....5.80
Seattle B3 .....6.40
So.Chicago,Ill. U5 .....5.80
So.SanFrancisco B3 ....6.30
Struthers,O. Y1 .....6.30

H.S., L.A. Wide Flange
Aliquippa,Pa. J5 .....5.50
Bethlehem,Pa. B2 .....5.80
Lackawanna,N.Y. B2 ..5.80
Munhall,Pa. U5 .....5.75
So.Chicago,Ill. U5 .....5.75

BEARING PILES
Munhall,Pa. U5 .....3.85
So.Chicago,Ill. U5 .....3.85

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.95
Bessemer,Ala. T2 .....5.95
Clairton,Pa. U5 .....5.95
Cleveland J5, R2 .....5.95
Conshohocken,Pa. A3 ...6.20
Ecorse,Mich. G5 .....6.90
Fairfield,Ala. T2 .....5.95
Fontana,Calif.(30) K1 ..6.55
Gary,Ind. U5 .....5.95
Geneva,Utah C11 .....5.95
Ind.Harbor,Ind. I-2 ....5.95
Ind.Harbor,Ind. Y1 .....6.45
Johnstown,Pa. B2 .....5.95
Munhall,Pa. U5 .....5.95
Pittsburgh J5 .....5.95
Seattle B3 .....6.85
Sharon,Pa. S3 .....5.95
So.Chicago,Ill. U5 .....5.95
SparrowsPoint,Md. B2 ..5.95
Warren,O. R2 .....5.95
Youngstown Y1 .....6.45
Youngstown U5 .....5.95

PLATES, Open-Hearth Alloy
Claymont,Del. C22 .....5.35
Coatesville,Pa. L7 .....5.75
Conshohocken,Pa. A3 ..5.55
Fontana,Calif. K1 .....6.20
Gary,Ind. U5 .....5.25
Johnstown,Pa. B2 .....5.25
Munhall,Pa. U5 .....5.25
Sharon,Pa. S3 .....5.70
So.Chicago,Ill. U5 .....5.25
SparrowsPoint,Md. B2 ..5.25

FLOOR PLATES
Cleveland J5 .....4.95
Conshohocken,Pa. A3 ...4.95
Ind.Harbor,Ind. I-2 ....4.95
Munhall,Pa. U5 .....4.95
So.Chicago,Ill. U5 .....4.95

PLATES, Ingot Iron
Ashland,c.l. (15) A10...4.15
Cleveland,c.l. R2 .....4.50
Warren,O.,c.l. R2 .....4.50

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..3.90
Aliquippa,Pa. J5 .....3.90
Ashland,Ky. (15) A10...3.90
Bessemer,Ala. T2 .....3.90
Clairton,Pa. U5 .....3.90
Claymont,Del. C22 .....4.35
Cleveland J5, R2 .....3.90
Coatesville,Pa. L7 .....4.35
Conshohocken,Pa. A3 ..4.35
Ecorse,Mich. G5 .....4.45
Fairfield,Ala. T2 .....3.90
Fontana,Calif.(30) K1 ..4.50
Gary,Ind. U5 .....3.90
GraniteCity,Ill. G4 .....4.60
Geneva,Utah C11 .....3.90
Harrisburg,Pa. C5 .....6.50
Houston S5 .....4.10
Ind.Harbor,Ind. I-2, Y1.3.90
Johnstown,Pa. B2 .....3.90
Lackawanna,N.Y. B2 ..3.90
Minnequa,Colo. C10 ....4.70
Munhall,Pa. U5 .....3.90
Pittsburgh J5 .....3.90
Seattle B3 .....4.80
Sharon,Pa. S3 .....4.15
So.Chicago,Ill. U5, W14.3.90
SparrowsPoint,Md. B2 ..3.90
Steubenville,O. W10 ....3.90
Warren,O. R2 .....3.90
Weirton,W.Va. W6 .....4.20
Youngstown R2, U5, Y1.3.90

PLATES, Carbon A.R.
Fontana,Calif. K1 .....5.65
Geneva,Utah C11 .....5.05

PLATES, Wrought Iron
Economy,Pa. B14 .....8.60

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 ..3.95
Aliquippa,Pa. J5 .....3.95
Alton,Ill. L1 .....4.50
Atlanta,Ga. A11 .....4.50
Bessemer,Ala. T2 .....3.95
Buffalo R2 .....3.95
Canton,O. R2 .....3.95
Clairton,Pa. U5 .....3.95
Cleveland R2 .....3.95
Detroit R7 .....4.10
Ecorse,Mich. G5 .....4.30
Emeryville,Calif. J7 ....4.70
Fairfield,Ala. T2 .....3.95
Fontana,Calif. K1 .....4.65
Gary,Ind. U5 .....3.95
Houston S5 .....4.10
Ind.Harbor,Ind. I-2, Y1.3.95
Johnstown,Pa. B2 .....3.95
KansasCity,Mo. S5 .....4.30
Lackawanna,N.Y. B2 ..3.95
LosAngeles B3 .....4.65
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.40
Niles,Calif. P1 .....4.65
N.Tonawanda,N.Y. B11.3.95
Pittsburg,Calif. C11 ....4.65
Pittsburgh J5 .....3.95
Portland,Oreg. O4 .....4.65
Seattle B3, N14 .....4.70
So.Chicago R2,U5,W14 ..3.95
So.Duquesne,Pa. U5 ....3.95
So.SanFran.,Cal. B3 ...4.70
Sterling,Ill. N15 .....4.55
Struthers,O. Y1 .....3.95
Torrance,Calif. C11 ....4.65
Weirton,W.Va. W6 .....4.10
Youngstown R2, U5 ....3.95

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....3.95
Atlanta A11 .....4.50
Niles,Calif. P1 .....4.65
Portland,Oreg. O4 .....4.65
SanFrancisco S7 .....5.00

BAR SIZE ANGLES; H.R.CARBON
Bethlehem,Pa. B2 .....4.15

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 .....4.675
Buffalo R2 .....4.675
Canton,O. R2 .....4.675
Canton,O. T7 .....4.72
Clairton,Pa. U5 .....4.675
Detroit R7 .....4.825
Ecorse,Mich. G5 .....5.025
Fontana,Calif. K1 .....5.725
Gary,Ind. U5 .....4.675
Houston S5 .....4.70
Ind.Harbor,Ind. I-2, Y1.4.675
Johnstown,Pa. B2 .....4.675
KansasCity,Mo. S5 .....4.90
Lackawanna,N.Y. B2 ..4.675
LosAngeles B3 .....5.725
Massillon,O. R2 .....4.675
Midland,Pa. C18 .....4.30
So.Chicago R2,U5,W14. 4.675
So.Duquesne,Pa. U5 ....4.675
Struthers,O. Y1 .....4.675
Warren,O. C17 .....4.675
Youngstown U5 .....4.675

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 .....4.925
Gary,Ind. U5 .....4.925
Youngstown U5 .....4.925

BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.925
Bessemer,Ala. T2 .....5.925
Bethlehem,Pa. B2 .....5.925
Clairton,Pa. U5 .....5.925
Cleveland R2 .....5.925
Ecorse,Mich. G5 .....6.675
Fairfield,Ala. T2 .....5.925
Fontana,Calif. K1 .....6.975
Gary,Ind. U5 .....5.925
Ind.Harbor,Ind. I-2 ....5.925
IndianaHarbor,Ind. Y1 .6.425
Johnstown,Pa. B2 .....5.925
Lackawanna,N.Y. B2 ..5.925
LosAngeles B3 .....6.625
Pittsburgh J5 .....5.925
Seattle B3 .....6.675
So.Duquesne,Pa. U5 ....5.925
So.SanFrancisco B3 ....6.675
Struthers,O. Y1 .....6.425
Youngstown U5 .....5.925

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....4.925
BeaverFalls,Pa. R2 ....4.925
BeaverFalls,Pa. M12 ....4.55
Buffalo B5 .....4.975
Camden,N.J. P13 .....5.375
Carnegie,Pa. C12 .....4.55
Chicago B5 .....4.925
Chicago W18 .....4.925
Cleveland A7, C20 ....4.925
Detroit P17, R7 .....5.075
Donora,Pa. A7 .....4.925
Elyria,O. W8 .....4.925
FranklinPark,Ill. N5 ....4.925
Gary,Ind. R2 .....4.925
GreenBay,Wis. F7 .....4.925
Hammond,Ind. L2,M13.4.925
Hartford,Conn. R2 .....5.475
LosAngeles R2 .....6.375
Mansfield,Mass. B5 .....5.475
Massillon,O. R2, R8....4.925
Monaca,Pa. S17 .....4.925
Newark,N.J., W18 .....5.375
Plymouth,Mich. P5 ....5.175
Pittsburgh J5 .....4.925
Putnam,Conn. W18 .....5.475
Readville,Mass. C14 ...5.475
St. Louis,Mo. M5 .....5.30
So.Chicago,Ill. W14 ....4.925
SpringCity,Pa. K3 ....5.375
Struthers,O. Y1 .....4.925
Waukegan,Ill. A7 .....4.925
Youngstown Y1 .....4.925
Youngstown F3 .....4.925

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ....6.00
BeaverFalls,Pa. M12 ....5.40
Bethlehem,Pa. B2 .....6.00
Buffalo B5 .....6.00
Camden,N.J. P13 .....6.40
Canton,O. R2 .....6.00
Canton,O. T7 .....5.99
Carnegie,Pa. C12 .....5.40
Chicago B5 .....6.00
Chicago W18 .....6.00
Cleveland A7 .....6.05
Cleveland C20 .....6.00
Detroit P17, R7 .....6.15
Donora,Pa. A7 .....6.05
Elyria,O. W8 .....6.00
Gary,Ind. R2 .....6.00
Hammond,Ind. L2, M13.6.00
Hartford,Conn. R2 .....6.45
Lackawanna,N.Y. B2 ....6.00
Mansfield,Mass. B5 ....6.45
Massillon,O. R2, R8....6.00
Midland,Pa. C18 .....5.40
Monaca,Pa. S17 .....6.00
Newark,N.J. W18 .....6.35
Plymouth,Mich. P5 ....6.20
So.Chicago,Ill. R2, W14.6.00
SpringCity,Pa. K3 ....6.20
Struthers,O. Y1 .....6.00
Warren,O. C17 .....6.00
Waukegan,Ill. A7 .....6.05
Worcester,Mass. A7 ....6.35
Youngstown Y1 .....6.00
Youngstown F3 .....6.00

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala R2 ..3.95
Atlanta A11 .....4.50
Buffalo R2 .....3.95
Cleveland R2 .....3.95
Emeryville,Calif. J7 ....4.70
Fairfield,Ala. T2 .....3.95
Fontana,Calif. K1 .....4.65
Gary,Ind. U5 .....3.95
Houston S5 .....4.10
Ind.Harbor,Ind. I-2, Y1.3.95
Johnstown,Pa. B2 .....3.95
KansasCity,Mo. S5 .....4.30
Lackawanna,N.Y. B2 ..3.95
LosAngeles B3 .....4.65
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 .....4.65
Pittsburg,Calif. C11 ....4.65
Pittsburgh J5 .....3.95
Portland,Oreg. O4 .....4.65
SandSprings,Okla. S5 ....4.60
Seattle B3, N14 .....4.70
So.Chicago,Ill. R2 .....3.95
So.Duquesne,Pa. U5 ....3.95
So.SanFrancisco B3 ....4.70
SparrowsPoint,Md. B2 ..3.95
Sterling,Ill.(1) N15 ....4.70
Struthers,O. Y1 .....3.95
Torrance,Calif. C11 ....4.65
Youngstown R2, U5 ....3.95

BARS, Reinforcing (Fabricated; to Consumers)
Huntington,W.Va. W7 ..5.50
Johnstown, ¼-1" B2 ....4.75
LosAngeles B3 .....5.45
Marion,O. P11 .....5.00
Seattle B3, N14 .....5.55
So.SanFrancisco B3 ....5.45
SparrowsPt. ¼-1" B2 ...4.75
Williamsport,Pa. S19 ...5.10

RAIL STEEL BARS
ChicagoHts.(3,4) C2 ....4.75
ChicagoHts.(3,4) I-2 ....4.75
Franklin,Pa.(3,4) F5 ....4.75
FortWorth,Tex.(26) T4 5.10
Huntngt,W.Va.(3) W7 ..5.75
Marion,O.(3) P11 .....4.75
Moline,Ill.(3) R2 .....4.05
Tonawanda(3,4) B12 ..5.00
Williamsport(3) S19 ....5.25
Williamsport(4) S19 ....5.35

BARS, Wrought Iron
Economy,Pa.(S.R.) B14.9.60
Economy,Pa.(D.R.)B14 11.90
Economy(Staybolt) B14 12.20
McK.Rks.(Staybolt)L5. 14.50
McK.Rks.(S.R.) L5 ....9.60
McK.Rks.(D.R.) L5 ...13.00

SHEETS, Hot-Rolled Steel
(18 gage and heavier)
AlabamaCity,Ala. R2 ..3.775
Ashland,Ky.(8) A10 ...3.775
Butler,Pa. A10 .....3.775
Cleveland J5, R2 .....3.775
Conshohocken,Pa. A3...4.175
Detroit M1 .....4.40
Ecorse,Mich. G5 .....3.975
Fairfield,Ala. T2 .....3.775
Fontana,Calif. K1 .....4.725
Gary,Ind. U5 .....3.775
Geneva,Utah C11 .....3.875
GraniteCity,Ill. G4 .....4.30
Ind.Harbor,Ind. I-2, Y1.3.775
Irvin,Pa. U5 .....3.775
Lackawanna,N.Y. B2 ..3.775
Munhall,Pa. U5 .....3.775
Niles,O. N12 .....5.25
Pittsburg,Calif. C11 ....4.475
Pittsburgh J5 .....3.775
Sharon,Pa. S3 .....4.175
So.Chicago,Ill. W14 ....3.775
SparrowsPoint,Md. B2..3.775
Steubenville,O. W10 ...3.775
Torrance,Calif. C11 ....4.475
Warren,O. R2 .....3.775
Weirton,W.Va. W6 ....3.775
WestLeechburg,Pa.A4 ..3.75
Youngstown U5, Y1 ...3.775

SHEETS, H.R. (19 gage)
AlabamaCity,Ala. R2 ..4.925
Dover,O. R1 .....5.825
Mansfield,O. E6 .....5.65
Niles,O. N12 .....5.75
Torrance,Calif. C11 ...5.575

SHEETS, H.R. (14 ga., heavier)
High-Strength Low-Alloy
Cleveland J5, R2 .....5.675
Conshohocken,Pa. A3 ..5.925
Ecorse,Mich. G5 .....6.225
Fairfield,Ala. T2 .....5.675
Fontana,Calif. K1 .....6.625
Gary,Ind. U5 .....5.675
Ind.Harbor,Ind. I-2 ....5.675
Ind.Harbor,Ind. Y1 ....6.175
Irvin,Pa. U5 .....5.675
Lackawanna(35) B2 ...5.675
Munhall U5 .....5.675
Pittsburgh J5 .....5.675
Sharon,Pa. S3 .....5.675
So.Chicago,Ill. U5 ....5.675
SparrowsPoint(36) B2..5.675
Warren,O. R2 .....5.675
Weirton,W.Va. W6 ....6.025
Youngstown U5 .....5.675
Youngstown Y1 .....6.175

SHEETS, Cold-Rolled
High-Strength Low-Alloy
Cleveland J5, R2 .....6.925
Ecorse,Mich. G5 .....7.475
Fontana,Calif. K1 .....7.875
Gary,Ind. U5 .....6.925
IndianaHarbor,Ind. Y1.7.425
IndianaHarbor,Ind. I-2.6.925
Irvin,Pa. U5 .....6.925
Lackawanna(37) B2 ...6.925
Pittsburgh J5 .....6.925
SparrowsPoint(38) B2..6.925
Warren,O. R2 .....6.925
Weirton,W.Va. W6 ....7.275
Youngstown Y1 .....7.425

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.575
Cleveland J5, R2	4.575
Ecorse,Mich. G5	4.775
Fairfield,Ala. T2	4.575
Follansbee,W.Va. F4	5.575
Fontana,Calif. K1	5.525
Gary,Ind. U5	4.575
GraniteCity,Ill. G4	5.275
Ind.Harbor,Ind. I-2,Y1	4.575
Irvin,Pa. U5	4.575
Lackawanna,N.Y. B2	4.575
Middletown,O. A10	4.575
Pittsburg,Calif. C11	5.525
Pittsburgh J5	4.575
SparrowsPoint,Md. B2	4.575
Steubenville,O. W10	4.575
Warren,O. R2	4.575
Weirton,W.Va. W6	5.775
Youngstown Y1	4.575

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala. R2	5.075
Ashland,Ky.(8) A10	5.075
Canton,O. R2	5.075
Delphos,O. N16	5.675
Dover,O. R1	5.775
Fairfield,Ala. T2	5.075
Gary,Ind. U5	5.075
GraniteCity,Ill. G4	5.50
Ind.Harbor,Ind. I-2	5.075
Irvin,Pa. U5	5.075
Kokomo,Ind.(13) C16	5.475
MartinsFerry,O. W10	5.075
Niles,O. N12	6.00
Pittsburg,Calif. C11	5.825
SparrowsPoint,Md. B2	5.075
Steubenville,O. W10	5.075
Torrance,Calif. C11	5.825
Weirton,W.Va. W6	5.075

SHEETS, Galvanized No. 10, High-Strength Low-Alloy

Irvin,Pa. U5	7.625
SparrowsPoint(39) B2	7.775

SHEETS, Galvannealed Steel

Canton,O. R2	5.625
Irvin,Pa. U5	5.625
Kokomo,Ind.(13) C16	6.025
Niles,O. N12	6.55

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	5.325
Middletown,O. A10	5.325

SHEETS, Electro Galvanized

Cleveland R2 (28)	5.925
Niles,O. R2 (28)	5.925
Weirton,W.Va. W6	5.775

SHEETS, Well Casing

Fontana,Calif. K1 (43)	5.10
Torrance,Calif. C11	5.275

BLUED Stock, 29 ga.

Yorkville,O. W10	7.00
Follansbee,W.Va. F4	7.10
Follansbee (23) F4	6.425

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	4.925
Cleveland R2	4.925
Gary,Ind. U5	4.925
GraniteCity,Ill. G4	5.625
Ind.Harbor,Ind. I-2	4.925
Irvin,Pa. U5	4.925
Middletown,O. A10	4.925
Youngstown Y1	4.925

TIN PLATE, Electrolytic (Base Box)

	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.40	$7.65	$8.05
Fairfield,Ala. T2	7.50	7.75	8.15
Gary,Ind. U5	7.40	7.65	8.05
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.40	7.65	8.05
Irvin,Pa. U5	7.40	7.65	8.05
Niles,O. R2	7.40	...	...
Pittsburg,Calif. C11	8.15	8.40	8.80
SparrowsPoint,Md. B2	7.50	7.75	8.15
Weirton,W.Va. W6	7.40	7.65	8.05
Yorkville,O. W10	7.40	7.65	8.05

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut lengths ½c lower)

	Field	Armature	Electric	Motor	Dynamo
BeechBottom W10 (cut lengths)	...	...	7.85	9.10	9.90
Brackenridge,Pa. A4	...	...	7.75	9.00	9.80
GraniteCity,Ill. G4 (cut lengths)	...	...	8.55	9.80	...
IndianaHarbor,Ind. I-2	7.55	7.85	(34)	(41)	...
Mansfield,O. E6 (cut lengths)	7.20	7.35	7.85	9.10	9.90
Niles,O. N12 (cut lengths)	...	...	6.75	7.25	...
Vandergrift,Pa. U5	...	...	7.85	8.35	9.60 10.40
Warren,O. R2	7.55	7.85	8.35	9.60	10.40
Zanesville,O. A10	..	..	7.85	8.35	9.60 10.40

SHEETS, SILICON (22 Ga. Base) COILS (Cut Lengths ½c lower)

Transformer Grade	72	65	58	52
BeechBottom W10 (cut lengths)	10.45	11.00	11.70	12.50
Brackenridge,Pa. A4	10.35	....	....	....
Vandergrift,Pa. U5	10.95	11.50	12.20	13.00
Warren,O. R2	10.95	....	....	....
Zanesville,O. A10	10.95	11.50	12.20	13.00

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)

	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)	....	....	15.35	15.85
Vandergrift,Pa. U5	13.50	14.35	15.35	15.85

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$6.25
Fairfield,Ala. T2	6.60
Gary,Ind. U5	6.50
GraniteCity,Ill. G4	6.70
Ind.Harbor,Ind. I-2, Y1	6.50
Irvin,Pa. U5	6.50
Niles,O. R2	6.50
Pittsburg,Calif. C11	7.25
SparrowsPoint,Md. B2	6.60
Warren,O. R2	6.50
Weirton,W.Va. W6	6.50
Yorkville,O. W10	6.50

HOLLOWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F4	6.10
Gary,Ind. U5	6.10
GraniteCity,Ill. G4	*6.30*
Ind.Harbor,Ind. Y1	6.10
Irvin,Pa. U5	6.10
Yorkville,O. W10	6.35

SHEETS, Culvert No. 16

	Cu Alloy	Cu Fe
Ashland,Ky. A10	5.875	....
Canton,O. R2	5.925	6.375
Fairfield,Ala. T2	5.875	6.125
Gary,Ind. U5	5.875	6.125
Ind.Harbor I-2	5.875	6.125
Irvin,Pa. U5	5.875	6.125
Kokomo,Ind. C16	6.525	....
MartinsFy.,O. W10	5.875	...
Pittsburg,Cal. C11	6.625	....
SparrowsPt. B2	5.875	....
Torrance,Cal. C11	6.625	....

SHEETS, Culvert, No. 16 Pure Iron

Ashland,Ky. A10	6.125
Fairfield,Ala. T2	6.125
MartinsFerry,O. W10	6.125

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland,Ky.(8) A10	4.025
Cleveland R2	4.375
Ind.Harbor,Ind. I-2	4.025
Warren,O. R2	4.375

SHEETS, Cold-Rolled Ingot Iron

Butler,Pa. A10	5.075
Cleveland R2	5.175
Middletown,O. A10	5.075
Warren,O. R2	5.175

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10	5.325
Canton,O. R2	5.825

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	5.575
Middletown,O. A10	5.575

SHEETS, ALUMINIZED

Butler,Pa. A10	8.425

TINPLATE, American Coke (Base Box)

	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$8.70	$8.95
Fairfield,Ala. T2	8.80	9.05
Gary,Ind. U5	8.70	8.95
Ind.Har. I-2, Y1	8.70	8.95
Irvin,Pa. U5	8.70	8.95
Pitts.,Cal. C11	9.45	9.70
Sp.Pt.,Md. B2	8.80	9.05
Warren,O. R2	8.70	...
Weirton,W.Va. W6	8.70	8.95
Yorkville,O. W10	8.70	8.95

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$7.85
Gary,Ind. U5	7.75
Irvin,Pa. U5	7.75
Yorkville,O. W10	7.75

SHEETS, LT. Coated Ternes, 6 lb

Yorkville,O. W10	$8.65

SHEET, Mfg. Ternes, 8 lb (Commercial Quality)

Gary,Ind. U5	$9.75
Yorkville,O. W10	9.75

SHEET, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va. W10	5.475
Gary,Ind. U5	5.475
Mansfield,O. E6	6.05
Middletown,O. A10	5.475
Niles,O. N12	6.00
Weirton,W.Va. W6	5.475

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.875

ROOFING SHORT TERNES (8 lb Coated)

Gary,Ind. U5	9.75

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2	5.65
Conshohocken,Pa. A3	5.90
Ecorse,Mich. G5	6.30
Fairfield,Ala. T2	5.65
Fontana,Calif. K1	6.55
Gary,Ind. U5	5.65
Ind.Harb.,Ind. I-2	5.65
Ind.Harbor,Ind. Y1	6.15
Lackawanna,N.Y. B2	*5.70*
LosAngeles(25) B3	6.40
Seattle(25) B3	6.65
Sharon,Pa. S3	5.65
So.SanFrancisco(25) B3	6.40
SparrowsPoint,Md. B2	5.70
Warren,O. R2	5.65
Weirton,W.Va. W6	6.10
Youngstown Y1	6.15
Youngstown U5	5.65

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland J5	7.45
Cleveland A7	7.30
Dover,O. G6	8.00
Ecorse,Mich. G5	8.15
Lackawanna,N.Y. B2	7.90
Sharon,Pa. S3	7.30
SparrowsPoint,Md. B2	7.90
Warren,O. R2	7.30
Weirton,W.Va. W6	7.95
Youngstown Y1	7.80

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	3.725
Alton,Ill. L1	4.20
Ashland,Ky.(8) A10	3.725
Atlanta A11	4.275
Bessemer,Ala. T2	3.725
Bridgeprt,Conn.(10) S15	4.225
Buffalo(27) R2	3.725
Butler,Pa. A10	3.725
Carnegie,Pa. S18	4.00
Conshohocken,Pa. A3	4.125
Detroit M1	4.40
Ecorse,Mich. G5	4.025
Fairfield,Ala. T2	3.725
Fontana,Calif. K1	4.975
Gary,Ind. U5	3.725
Houston,Tex. S5	4.90
Ind.Harbor,Ind. I-2,Y1	3.725
Johnstown,Pa.(25) B2	3.725
KansasCity,Mo.(9) S5	4.10
Lackaw'na,N.Y.(32) B2	3.725
LosAngeles(25) B3	4.475
Milton,Pa. B6	4.35
Minnequa,Colo. C10	4.775
NewBritain(10) S15	4.225
N.Tonawanda,N.Y. B11	3.725
Pittsburg,Calif. C11	4.475
Riverdale,Ill. A7	3.725
SanFrancisco S7	5.00
Seattle(25) B3	4.725
Seattle N14	4.75
Sharon,Pa. S3	4.225
So.Chicago,Ill. W14	3.725
So.SanFrancisco(25) B3	4.475
SparrowsPoint,Md. B2	3.725
Sterling,Ill. N15	4.725
Torrance,Calif. C11	4.475
Warren,O. R2	3.725
Weirton,W.Va. W6	3.825
WestLeechburg,Pa. A4	3.75
Youngstown U5, Y1	3.725

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15	6.05
Carnegie,Pa. S18	5.85
Fontana,Calif. K1	7.30
Gary,Ind. U5	6.10
Houston,Tex. S5	5.90
KansasCity,Mo. S5	6.10
Midland,Pa. C18	5.85
NewBritn,Conn.(10) S15	6.05
Sharon,Pa. S3	6.45
Youngstown U5	6.10

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	5.50
Berea,O. C7	6.60
Bridgeprt,Conn.(10) S15	5.80
Butler,Pa. A10	5.10
Cleveland A7, J5	5.10
Dearborn,Mich. D3	6.05
Detroit D2	5.60
Detroit M1	5.45
Dover,O.(40) G6	5.50
Ecorse,Mich. G5	5.30
Follansbee,W.Va. F4	5.10
Fontana,Calif. K1	6.75
FranklinPark,Ill.(40) T6	5.35
Ind.Harbor,Ind. I-2	5.35
Lackawanna,N.Y. B2	5.10
LosAngeles C1	*6.85*
Mattapan,Mass. T6	5.95

STRIP, Cold-Finished, Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Berea,O. C7	...	6.80	7.40	9.35	11.65
Bridgeport,Conn.(10) S15	5.80	7.65	8.25	10.20	12.50
Bristol,Conn. W1	...	...	8.55	10.50	....
Carnegie,Pa. S18	....	6.80	7.40	9.35	11.65
Cleveland A7	5.10	7.30	8.25	10.20	12.50
Dearborn,Mich. D3	6.05	7.90	8.50	...	....
Detroit D2	6.45	7.50	8.10	...	....
Dover,O. G6	5.70	7.65	8.25	10.20	12.50
FranklinPark,Ill. T6	5.45	7.45	8.40	10.35	12.65
Harrison,N.J. C18	....	...	7.70	9.65	11.95
Mattapan,Mass. T6	5.95	7.60	8.55	10.50	12.80
NewBritn.,Conn.(10) S15	5.80	7.65	8.25	10.20	12.50
NewCastle,Pa. B4	5.80	7.65	8.25	10.20	....
NewCastle,Pa. E5	5.80	7.65	8.25	10.20	12.50
NewHaven,Conn. D2	6.70	7.60	8.20	...	....
NewYork W3	...	7.95	8.55	10.50	12.80
Pawtucket,R.I. N8: Cleve.orPitts.Base	...	7.65	8.25	10.20	12.50
Worcester,Mass.,Base	6.30	7.95	8.55	10.50	12.80
Sharon,Pa. S3	5.80	7.65	8.25	10.20	12.50
Trenton,N.J. R5	...	7.95	8.55	10.50	12.80
Wallingford,Conn. W2	6.30	7.60	8.20	10.15	12.65
Weirton,W.Va. W6	5.80	7.65	8.25	10.20	12.50
Worcester,Mass. A7	5.40	7.60	8.55	10.50	12.80
Worcester,Mass. T6	5.95	7.60	8.55	10.50	12.80
Youngstown C8	...	*7.65*	*8.25*	*10.20*	*12.50*

Spring Steel (Tempered)

Trenton,N.J. R5 (29)	...	...	10.30	12.50	15.35
Harrison,N.J. C18	....	...	10.30	12.50	15.35
NewYork W3	...	...	10.30*	12.50*	15.35*
Youngstown C8	...	...	*10.30*	*12.50*	*15.35*

Middletown,O. A10 ....5.10
NewBritain(10) S15 ....5.80
New Castle,Pa. B4 ....5.80
NewCastle,Pa.(40) E5 5.70
NewHaven,Conn. D2 ...5.85
NewHaven,Conn. A7 ....5.60
Pawtucket,R.I. R3 ....6.45
Pawtucket,R.I.(21) N8..6.30
Riverdale,Ill.(40) A1 ...5.35
Rome,N.Y. R6 .....5.10
Sharon,Pa. S3 .....5.80
SparrowsPoint,Md. B2 ..5.10
Trenton,N.J R5 .....6.45
Wallingford,Conn. W2 ..6.30
Warren,O.(40) T5 ....5.25
Warren,O. R2 .....5.10
Weirton,W.Va. W6 ....5.10
Youngstown C8 (40) 5.70
Youngstown Y1 .....5.10

STRIP, Electro Galvanized

Dover,O. G6	5.50
Warren,O. T5	5.25
Weirton,W.Va. W6	5.10
Youngstown C8	*5.70*

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10) S15	12.15
Carnegie,Pa. S18	10.60
Cleveland A7	11.40
Dover,O. G6	11.90
Fontana,Calif. K1	13.05
Harrison,N.J. C18	10.60
Midland,Pa. C18	10.60
NewBritn.Conn.(10) S15	12.15
Pawtucket,R.I.(11) N8	12.15
Pawtucket,R.I.(12) N8	12.45
Sharon,Pa. S3	12.00
Worcester,Mass. A7	11.70
Youngstown C8	*12.00*

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	3.975
Warren,O. R2	4.325

STRIP, Cold-Rolled Ingot Iron

Warren.O. R2	5.70

TIGHT COOPERAGE HOOP

Atlanta A11	4.45
Lackawanna,N.Y. B2	4.30
Riverdale,Ill. A1	4.30
Sharon,Pa. S3	4.55
Youngstown U5	4.15

* Plus $1.575 per 100 lb.

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet.
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Boiardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Div., H.K. Porter Co.
B14 A. M. Byers Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div. Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Corp.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div. Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire

G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div. Borg-Warner Corp.
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

WIRE, Merchant Quality

(6 to 8 gage)	An'ld.	Galv.
AlabamaCity R2..	6.075	6.325
Aliquippa J5	6.075	6.45*
Atlanta A11	6.325	6.675
Bartonville(19) K4	6.075	6.45
Buffalo W12	4.85	....
Cleveland A7	6.075	6.225
Crawfordsville M8	6.175	6.55
Donora,Pa. A7 ..	6.075	6.225
Duluth,Minn. A7	6.075	6.225
Fairfield T2	6.075	6.225
Houston,Tex. S5..	6.10	6.55
Johnstown B2	6.075	6.45†
Joliet,Ill. A7	6.075	6.225
KansasCy,Mo. S5.	6.30	6.75
Kokomo C16	6.175	6.425
LosAngeles B3 ..	7.025	....
Minnequa C10 ...	6.325	6.70*
Monessen P7	5.95	6.40
Palmer W12	5.15	....
Pitts.,Calif. C11..	7.025	7.175
Prtsmth.(18)P12.	6.475	....
Rankin A7	6.075	6.225
So.Chicago R2 ...	6.075	6.325
So.S.Fran. C10 ..	7.025	7.40*
SparrowsPt. B2 .	6.175	6.55†
Sterling,Ill.(1)N15	6.075	6.45
Struthers,O. Y1..	6.075	6.475
Torrance,Cal. C11	7.025	....
Worcester A7 ...	6.375	6.525

*Based on 14-cent zinc; †14.50-cent zinc.

ROPE WIRE (A)

Alton,Ill. L1	9.15
Bartonville,Ill. K4	8.95
Buffalo W12 (43)	8.55
Fostoria,O. S1 (43)	8.85
Johnstown,Pa. B2 (43) .	8.55
Monessen,Pa. P16 (43)..	8.55
Monessen,Pa. P7 (43) ..	8.80
Muncie,Ind. I-7 (43) ...	8.75
Palmer,Mass. W12 (43)..	8.85
Portsmouth,O. P12 (43).	8.55
Roebling,N.J. R5 (43) ..	8.85
SparrowsPt. B2 (43)	8.65
Struthers,O. Y1 (43) ...	8.55
Worcester J4, T6 (43) ..	8.85

(A) Plow and Mild Plow; add 0.25c for improved plow.

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2 ..	5.225
Aliquippa,Pa. J5 (42) ..	4.85
Atlanta A11	5.475
Alton,Ill. L1	5.45
Bartonville,Ill. K4	5.325
Buffalo W12	4.85
Chicago W13	5.475
Cleveland A7, C20	5.225
Crawfordsville,Ind. M8..	5.325
Donora,Pa. A7	5.225
Duluth,Minn. A7	5.225
Fairfield,Ala. T2	5.225
Fostoria,O.(24) S1	5.725
Houston S5	5.25
Johnstown,Pa. B2	5.225
Joliet,Ill. A7	5.225
KansasCity,Mo. S5	5.45
Kokomo,Ind. C16	5.325
LosAngeles B3	6.175
Minnequa,Colo. C10 ...	5.475
Monessen,Pa. P7	5.10
Newark 6-8 ga. I-1	5.88
No.Tonawanda B11	5.225
Palmer,Mass. W12	5.15
Pittsburg,Calif. C11 ...	6.175
Portsmouth,O. P12	5.625
Rankin,Pa. A7	5.225
So.Chicago,Ill. R2	5.225
So.SanFrancisco C10 ..	6.175
SparrowsPoint,Md. B2..	5.325
Sterling,Ill. (1) N15 ...	5.225
Struthers,O. Y1	5.225
Torrance,Calif. C11	6.175
Waukegan,Ill. A7	5.225
Worcester,Mass. A7 ...	5.525

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	6.20
Buffalo W12	6.35
Cleveland A7 (43)	5.85
Crawf'sville,Ind. M8(43)	5.85
Dover,O. G6	6.20
Fostoria,O. S1 (43)	6.00
Kokomo,Ind. C16 (43)..	5.70
FranklinPark,Ill. T6(43)	6.20
Massillon,O. R8 (43).....	5.85
Monessen,Pa. P16 (43)..	6.35
Monessen,Pa. P7	6.10
Pawtkt,R.I.(12) N8 (43)	6.85
Trenton,N.J. R5 (43)...	6.15
Worcester,Mass. A7(43)	6.15
Worcester,Mass. T6(43)	6.50
Worcester,Mass. W12 ...	6.65

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	8.90
Monessen,Pa. P16 (43)..	8.50
Muncie,Ind. I-7 (43)	8.70
Roebling,N.J. R5 (43)...	8.80
SparrowsPt.,Md. B2 (43)	8.60
Johnstown,Pa. B2 (43)..	8.50

WIRE (16 gage)	Ann'ld. Stone	Galv. Stone
(Add 4.7% on base and extras)		
Aliquippa J5	10.15	12.15
Bartonville(19)K4	10.25	12.00*
Cleveland A7	10.25	11.55
Crawfrdsville M8	10.25	12.00
Fostoria,O. S1 ..	10.40	13.00
Johnstown B2 ..	10.73	12.58§
Kokomo C16	10.625†	12.325†
Minnequa C10 ..	10.40	12.425*
Palmer,Mass. W12	10.25	12.15
Pitts.,Cal. C11 ..	10.60	11.90
SparrowsPt. B2..	10.84	12.68§
Waukegan A7	10.25	11.55
Worcester A7	....	11.85

*Based on 14-cent; §14.50 cent zinc. †Includes 4.7% increase.

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5 (43) ..	6.25
Alton,Ill. L1	6.85
Bartonville,Ill. K4	6.64
Buffalo W12	6.25
Cleveland A7 (43)	6.25
Donora,Pa. A7 (43)	6.25
Duluth,Minn. A7 (43) ..	6.25
Fostoria,O. S1 (43)	6.25
Johnstown,Pa. B2 (43)..	6.25
Millbury(12) N6 (43)....	8.05
Minnequa,Colo. C10(43).	6.50
Monessen,Pa. P7 (43)....	6.25
Monessen,Pa. P16	*6.75*
Muncie,Ind. I-7 (43)....	6.45
Palmer,Mass. W12	6.55
Pittsburg,Calif. C11(43).	7.20
Roebling,N.J. R5 (43)....	6.55
Portsmouth,O. P12(43)..	6.25
So.Chicago,Ill. R2 (43)..	6.25
So.SanFran. C10 (43)....	7.20
SparrowsPt.,Md. B2 (43)	6.35
Struthers,O. Y1 (43)....	6.25
Trenton,N.J. A7 (43)....	6.55
Waukegan,Ill. A7 (43)..	6.25
Worcester A7, T6 (43) ..	6.55
Worcester,Mass. W12	6.55
Worcester,Mass. J4	6.75

WIRE, Tire Bead

Bartonville,Ill. K4	11.51
Monessen,Pa. P16 (43) .	11.40
Roebling,N.J. R5 (43)...	11.55

WIRE, Fine & Weaving (8"Coils)

Bartonville,Ill. K4	9.42
Buffalo W12	8.90
Chicago W13	9.32
Cleveland A7 (43)	8.90
Crawf'sville,Ind. M8(43)	8.90
Fostoria,O. S1 (43).....	8.90
Johnstown,Pa. B2 (43)..	8.90
Kokomo,Ind. C16 (43)...	8.90
Monessen,Pa. P16 (43)..	8.90
Muncie,Ind. I-7 (43)....	9.10
Palmer,Mass. W12	9.20
Roebling,N.J. R5 (43)...	9.20
Waukegan,Ill. A7 (43)..	8.90
Worcstr,Mass. A7,T6(43)	9.20

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	144
Aliquippa,Pa. J5	*147**
Atlanta A11	149
Bartonville,Ill.(19) K4...	147
Crawfordsville,Ind. M8 .	149
Donora,Pa. A7	142
Duluth,Minn. A7	142
Fairfield,Ala. T2	142
Houston,Tex. S5	149
Johnstown,Pa. B2	147
Joliet,Ill. A7	142
KansasCity,Mo. S5	153
Kokomo,Ind. C16	149
Minnequa,Colo. C10	153*
Monessen,Pa. P7	146
Pittsburg,Calif. C11	162
Rankin,Pa. A7	142
So.Chicago,Ill. R2	144
So.SanFran.,Calif. C10..	167*
SparrowsPoint,Md. B2 ..	149
Sterling,Ill.(1) N15	147

*Based on 14-cent zinc

WIRE, Upholstery Spring

Aliquippa,Pa. J5	6.275
Alton,Ill. L1	6.50
Buffalo W12	5.90
Cleveland A7	6.275
Donora,Pa. A7	6.275
Duluth,Minn. A7	6.275
Johnstown,Pa. B2	6.275
Los Angeles B3.....	7.225
Minnequa,Colo. C10	6.525
Monessen,Pa. P7	5.90
Monessen,Pa. P16(42) ..	6.40
NewHaven,Conn. A7 ...	6.575
Palmer,Mass. W12	6.20
Pittsburg,Calif. C11	7.225
Portsmouth,O. P12	6.275
Roebling,N.J. R5	6.575
So.Chicago,Ill. R2	6.275
So.SanFrancisco C10 ...	7.225
SparrowsPoint,Md. B2..	6.375
Torrance,Calif. C11	7.225
Trenton,N.J. A7	6.575
Waukegan,Ill. A7	6.275
Worcester,Mass. A7 ...	6.575

WOVEN FENCE,9-15½ Ga. Col.

AlabamaCity,Ala. R2	135
Ala.City,Ala.,17-18ga.R2..	222
Aliquippa,Pa.9-14½ga.J5 .	131
Atlanta A11	140
Bartonville,Ill.(19) K4 ..	138
Crawfordsville,Ind. M8 ..	140
Donora,Pa. A7	133
Duluth,Minn. A7	133
Fairfield,Ala. T2	133
Houston,Tex. S5	139
Johnstown,Pa. B2	138
Johnstown,17ga.,6" B2 ..	229
Joliet,Ill. A7	133
KansasCity,Mo. S5	143
Kokomo,Ind. C16	140
Minnequa,Colo. C10	146*
Monessen,Pa. P7	136
Pittsburg,Calif. C11	156
Rankin,Pa. A7	133
So.Chicago,Ill. R2	135
Sterling,Ill.(1) N15	138

*Based on 14-cent zinc

BALE TIES, Single Loop Col.

AlabamaCity,Ala. R2....	132
Atlanta A11	135
Bartonville,Ill.(19) K4 ..	132
Crawfordsville,Ind. M8 ..	134
Donora,Pa. A7	132
Duluth,Minn. A7	132
Fairfield,Ala. T2	132
Joliet,Ill. A7	132
KansasCity,Mo. S5	135
Kokomo,Ind. C16	134
Minnequa,Colo. C10	137
Pittsburg,Calif. C11	156
So.Chicago,Ill. R2	132
So.SanFran.,Calif. C10 ..	156
Sparrow:Point,Md. B2 ..	134
Sterling,Ill.(1) N15	132

FENCE POSTS

ChicagoHts.,Ill. C2	140
Duluth,Minn. A7	133
Franklin,Pa. F5	140
Huntington,W.Va. W7 ..	148
Johnstown,Pa. B2	148
Marion,O. P11	140
Minnequa,Colo. C10	138
Moline,Ill. R2	136
So.Chicago,Ill. R2	140
Tonawanda,N.Y. B12 ..	148
Williamsport,Pa. S19 ...	158

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	9.85
Lebanon,Pa.(31) B2	9.85
Minnequa,Colo. C10	9.85
Pittsburgh O3, P14	9.85

AXLES

Ind.Harbor,Ind. S13	5.65
Johnstown,Pa. B2	5.65

NAILS, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2 (44)	118
Aliquippa,Pa. J5 (44)	118
Atlanta A11	130
Bartonville,Ill.(19) K4 ..	127
Chicago,Ill. W13 (44)	118
Cleveland A9	125
Crawfordsville,Ind. M8 ..	130
Donora,Pa. A7 (44)	118
Duluth,Minn. A7 (44)	118
Fairfield,Ala. T2 (44)	118
Galveston,Tex. D7(44)	126
Houston,Tex. S5	126
Johnstown,Pa. B2 (44)...	118
Joliet,Ill. A7 (44)	118
KansasCity,Mo. S5	130
Kokomo,Ind. C16	129
Minnequa,Colo. C10 (44) .	123
Monessen,Pa. P7	124
Pittsburg,Calif. C11 (44) .	137
Portsmouth,O. P12	132
Rankin,Pa. A7 (44)	118
So.Chicago,Ill. R2 (44) .	118
SparrowsPoint,Md.B2(44)	120
Sterling,Ill.(1) N15	127
Torrance,Calif. C11 (44).	138
Worcester,Mass. A7 (44).	124

STAPLES, Polished, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2 (44)	118
Atlanta A11	129
Bartonville,Ill. (19) K4..	127
Chicago W13	127
Crawfordsville,Ind. M8 ..	128
Donora,Pa. A7 (45)	118
Duluth,Minn. A7 (45) ..	118
Failfield,Ala. T2 (45)	118
Johnstown,Pa. B2 (45)...	118
Joliet,Ill. A7 (45)	118
Kokomo,Ind. C16	128
Minnequa,Colo. C10 (45).	123
Pittsburg,Calif. C11 (45).	137
Portsmouth,O. P12	132
Rankin,Pa. A7 (45)	118
SparrowsPoint,Md.B2(45)	120
Sterling,Ill.(1) N15	126
Torrance,Calif. C11 (45).	138
Worcester,Mass. A7 (45).	124

NAILS, Cut (100 lb keg)

To dealers (33)	
Conshohocken,Pa. A3 ..	$7.80
Wheeling,W.Va. W10 ...	7.80

TIE PLATES

Fairfield,Ala. T2	4.775
Gary,Ind. U5	4.775
Ind.Harbor,Ind. I-2 ..	4.775
Lackawanna,N.Y. B2 ..	4.775
Minnequa,Colo. C10..	$95.50*
Pittsburg,Calif. C11 ...	4.925
Seattle B3	4.925
Steelton,Pa. B2	4.775
Torrance,Calif. C11	4.925

*Per net ton.

JOINT BARS

Bessemer,Pa. U5	4.925
Fairfield,Ala. T2	4.925
Ind.Harbor,Ind. I-2	4.925
Joliet,Ill. U5	4.925
Lackawanna,N.Y. B2 ..	4.925
Minnequa,Colo. C10	4.925
Steelton,Pa. B2	4.925

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1.	6.65
KansasCity,Mo. S5	6.40
Lebanon,Pa. B2	6.65
Minnequa,Colo. C10	6.65
Pittsburgh J5	6.65
Seattle B3	7.15
So.Chicago,Ill. R2	6.65
Struthers,O. Y1	6.65
Youngstown R2	6.65

RAILS	Std. No. 1	Std. No. 2	Ind. Tee All No. 2	Rails 60 lb Under
Bessemer,Pa. U5	3.775	3.675	3.725	4.25
Ensley,Ala. T2	3.775	3.675	...	4.25
Fairfield,Ala. T2	...	...	...	4.25
Gary,Ind. U5	3.775	3.675	3.725	...
Huntington,W.Va. W7	....	....	....	5.25
IndianaHarbor,Ind. I-2 ...	3.775	3.675	3.725	...
Johnstown,Pa. B2	...	...	...(16)	4.25
Lackawanna,N.Y. B2	3.775	3.675	...	4.25
Minnequa,Colo. C10	$75.50*	$73.50*	...	4.75
Steelton,Pa. B2	3.775	3.675	...	...
Williamsport,Pa. S19	...	...	...	5.00

* Per net ton.

TOOL STEEL

(Prices subject to 4.7% increase)

Grade	$ per lb
Regular Carbon	0.230
Extra Carbon	0.270
Special Carbon	0.325
Oil Hardening	0.350
5% Cr Hot Work	0.350
Hi-Carbon-Cr	0.635

Grade by Analysis

W	Cr	V	Co	
18	4	1	....	1.505
18	4	2	....	1.65-1.66
20.25	4.25	1.6	12.25	3.535-3.675
19	4	2	7	2.460
18.25	4.25	1	4.75	2.125
18	4	2	9	2.445-2.45
13.5	4	3	....	1.6025
9	3.25	0.5	....	1.01

W	Cr	V	Mo	
6.4	4.5	1.9	5	0.96-0.965
6	4	3	6	1.190
1.5	4	1	8.5	0.810

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.50c for 17 Ga. & heavier.
(15) ¼" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven, Conn., base.
(22) Del. San Francisco Bay area.
(23) 30 Ga. 36" wide.
(24) Deduct 0.20c, finer than 18 Ga.
(25) Bar mill bands.
(26) Reinforcing, mill lengths, to fabricators; to consumers, 5.35c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Add $31.50 per ton.
(30) Sheared: add 0.35c for universal mill.
(31) Not annealed.
(32) Rd. or square edge.
(33) To jobbers, deduct 20c.
(34) 7.35c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter: 60" & narrower.
(38) 14 gage & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Plus 0.375c per 100 lb.
(43) Plus 4.7% on base and extras.
(44) Plus 45c per 100 lb.
(45) Plus 40c per 100 lb.

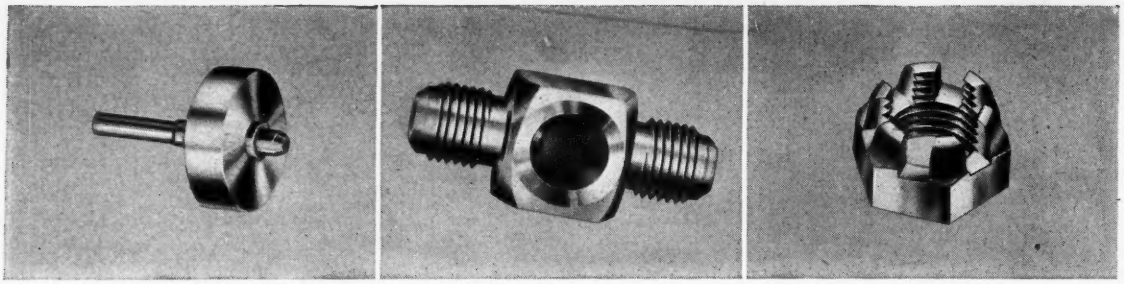
Key to Producers

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M9 Midvale Co.
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.

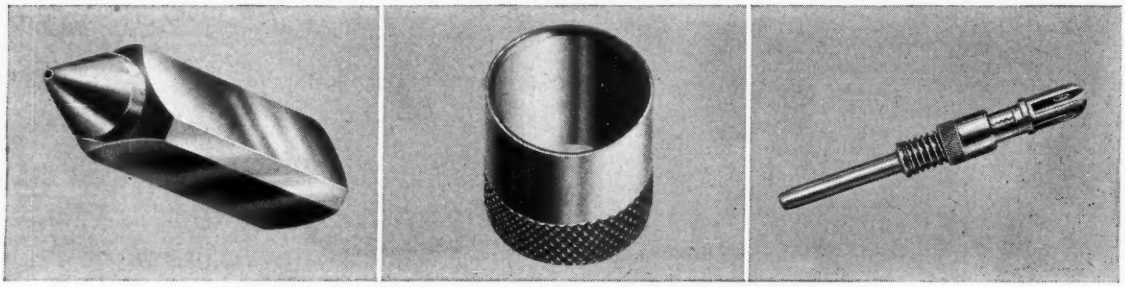
N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng-HighCarb.Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Div.
N14 Nrthwst. Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

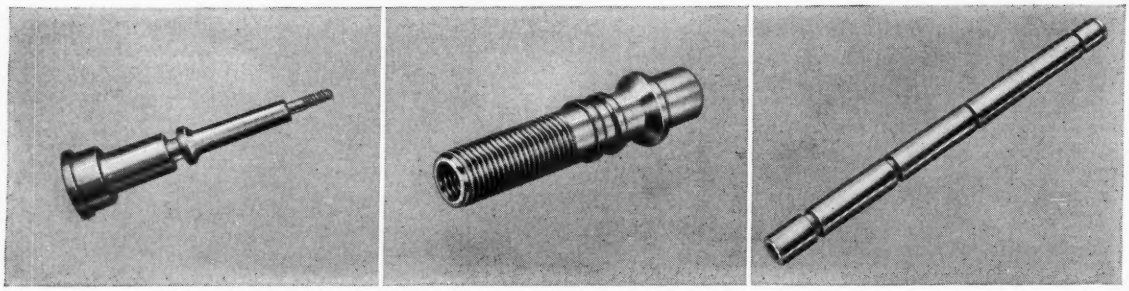
P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv.,EatonMfg.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield S.&I. Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S24 Seidelhuber Steel
T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
U4 Universal Cyclops Steel
U5 United States Steel Co.
V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div. International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet&Tube



Better Finishes . . . Faster Speeds . . . or Fewer Rejects



Reported on Each of These Jobs



produced from *Carpenter* Free-Machining Stainless

These are not unusual job records. The reason for performance records such as 10% faster machining and 5% to 8% fewer rejects is the *constant uniformity* of Carpenter Free-Machining Stainless. Every bar, on shipment after shipment of Carpenter Stainless, responds the same when it meets your cutting tools.

Under today's conditions, it is important that you get every possible finished part from the Stainless Steel you buy. To do that . . . to find new ways to turn Stainless jobs out faster and better . . . make use of the personal shop help your Carpenter representative can give you. He will be glad to work with you and your men, to make his experience stretch the available supply of Stainless Steel.

Another help Carpenter can give you is useful information about machining Stainless. For example, the Carpenter "NOTEBOOK on Machining Stainless Steels" covers turning, drilling, reaming, lubrication, etc. If you would like a copy, just send us a note on your company letterhead, indicating your title.

The Carpenter Steel Company, 139 W. Bern St., Reading, Pa.
Export Department: Port Washington, N. Y. — "CARSTEELCO"

more than corrosion resistance

Carpenter
STAINLESS STEEL
takes the problems out of production

For Easy-to-Use Stainless Call Carpenter. Warehouses in principal cities throughout the country.

STANDARD PIPE, T & C

BUTTWELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Black A	Black B	Black C	Galvanized D	Galvanized E*	Galvanized F
⅛	5.5c	0.24	30.5	28.5	...	1.25	+6.25	....
¼	6.0	0.42	25	23	...	+1.75	+9.25	....
⅜	6.0	0.57	20	18	...	+5.5	+15.75	....
½	8.5	0.85	32.5	30.5	31.5	13.25	6.25	12.25
¾	11.5	1.13	35.5	33.5	34.5	17.25	10.25	16.25
1	17.0	1.68	38	36	37	20.75	13.75	19.75
1¼	23.0	2.28	38.5	36.5	37.5	20.5	14.75	19.5
1½	27.5	2.73	39	37	38	21.5	15.75	20.5
2	37	3.68	39.5	37.5	38.5	22	16.25	21
2½	58.5	5.82	40	38	39	21.75	17.25	20.75
3	76.5	7.62	40	38	39	21.75	17.25	20.75

*Based on 19.50-cent zinc.

Column A: Etna, Pa. N2 and 33% on 3½", 4"; Butler, Pa. ⅛-⅜", F6; Benwood, W. Va., 1 point lower on ⅛", 1¾ points lower on ¼", and 2¼ points lower on ⅜", W10; Sharon, Pa. M6, 1 point higher on ⅛", 2 points lower on ¼" and ⅜".

Following make ½" and larger: Lorain, O. N3; Youngstown R2 and 33% on 3½" and 4"; Youngstown Y1. Fontana, Calif. K1 quotes 11½ points lower on ½" and larger continuous weld and 20.5% on 3½" and 4".

Column B: Sparrows Point, Md. B2; Wheatland, Pa. 2 points higher on ⅛" through 3" W9.

Column C: Indiana Harbor, Ind., Y1; Alton, Ill., 2 points lower L1.

Column D: Butler, Pa. F6, ⅛-⅜"; Benwood, W. Va. W10, except plus ¼ % on ⅛", plus 3½ % on ¼", plus 7¾ % on ⅜" and 14¼ % on 3½", 4".

Etna, Pa. N2 and 14¼ % on 3½", 4". Following quote only on ½" and larger: Lorain, O. N3; Youngstown R2, and 14¼ % on 3½" and 4"; Youngstown Y1; Fontana, Calif. K1 quotes 11½ points lower.

Column E: Sparrows Point, Md. B2.

Column F: Indiana Harbor, Ind. Y1; Alton, Ill. 1¾ points lower on ½", ¾" and 1", 1 point lower on 1¼", 1½" and 2", ¼ point lower on 2½" and 3" L1.

SEAMLESS AND ELECTRIC WELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Seamless Black A	Seamless Galv. B	Elec. Weld Black C	Elec. Weld Galv. D
2	37.0c	3.68	24	6	24	6
2½	58.5	5.82	27	8.25	27	8.25
3	76.5	7.62	27	8.25	27	8.25
3½	92.0	9.20	29	10.25	29	10.25
4	$1.09	10.89	29	10.25	29	10.25
5	1.48	14.81	33.75	15	33.75	15
6	1.92	19.18	33.75	15	33.75	15

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1.

Column B: Lorain N3; Youngstown Y1.

Columns C & D: Youngstown R2.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft., mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	14.19	17.37	16.20	16.20
1¼	13	16.97	20.79	16.46	19.19
1½	13	18.22	22.31	18.19	21.41
1¾	13	20.35	24.92	20.69	24.35
2	13	22.81	27.94	23.19	27.28
2¼	13	25.69	31.46	25.84	30.42
2¼	12	28.40	34.78	28.46	33.50
2½	12	31.28	38.31	31.19	36.67
2¾	12	33.87	41.49	33.05	38.86
3	12	35.78	43.93	34.69	40.82

CLAD STEELS

(Cents per pound; subject to 4.7% increase on base price and extras)

Cladding Stainless	Plates — Carbon Base 10%	Plates — Carbon Base 20%	Strip Cold-Rolled Carbon Base Both Sides	Sheets — Carbon Base 10%	Sheets — Carbon Base 20%	Cu Base Both Sides
302 ...	....	....	....	19.75	26.24–27.50	77.00
304 ...	25.00	29.50	....	24.50	27.50–27.77	77.00
309 ...	30.50	35.00	....	....	....	....
310 ...	36.50	41.00	....	....	....	144.00
316 ...	29.50	34.00	....	26.00	35.92–36.50	....
317 ...	34.50	39.00	....	....	....	....
318 ...	33.50	38.00	....	....	....	....
321 ...	26.50	31.00–32.00	....	23.00	33.00	111.00
347 ...	27.50	32.00	....	24.00	33.50–33.83	130.00
405 ...	21.25	27.75	....	....	....	....
410 ...	20.75	27.25	....	....	....	....
Nickel .	33.55	45.15	41.00	54.00	....	....
Inconel.	41.23	54.18	....	....	....	165.00
Monel..	34.93	46.28	....	....	....	....
Copper*	....	....	23.70†	29.65‡	....	44.00	....

* Deoxidized. † 20.20c for hot-rolled. ‡ 26.40c for hot-rolled. Production points for carbon base products: Stainless plates, sheet, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; nickel, copper-clad strip, Carnegie, Pa., S18. Production point for copper-base sheets is Carnegie, Pa. A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS
(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:
½-in. & smaller diam. 15
⅝-in. & ⅝-in. 18.5
¾-in. and larger ... 17.5
Longer than 6 in.:
All diams. 14
Lag bolts, all diams.:
6 in. and shorter ... 23
over 6 in. long 21
Ribbed Necked Carriage 18.5
Blank 34
Plow 34
Step, Elevator, Tap and Sleigh Shoe 21
Tire bolts 21
Boiler & Fitting-Up Bolts 31

NUTS

	Reg.	Hvy.
H.P. & C.P. Square:		
½-in. & smaller	15	15
⅝-in. & ⅝-in..	12	6.5
¾-in.-1½-in. ..	9	1
1⅝-in. & larger	7.5	1
H.P. Hex.:		
½-in. & smaller	26	22
⅝-in. & ⅝-in..	16.5	6.5
¾-in.-1½-in. ..	12	2
1⅝-in. & larger	8.5	2
C.P. Hex.:		
½-in. & smaller	26	22
⅝-in. & ⅝-in..	23	17.5
¾-in. & 1½-in.	19.5	12
1⅝-in. & larger	12	6.5

SEMIFINISHED NUTS
American Standard
(Per cent off list for less than case or keg quantities)

	Reg.	Hvy.
½-in. & smaller..	35	28.5
⅝-in. & ⅝-in. ..	29.5	22
¾-in.-1½-in.	24	15
1⅝-in. & larger..	18	8.5
		Light
⅞-in. & smaller		35
1½-in. to ⅝-in.		28.5
¾-in. to 1½-in.		26

STEEL STOVE BOLTS
(F.o.b. plant, per cent off list in packages)
Plain finish .....48 & 10
Plated finishes .....31 & 10

HEXAGON CAP SCREWS
(1020 steel; packaged: per cent off list)
6 in. or shorter:
⅝-in. & smaller 42
¾-in. through 1 in. .. 34
Longer than 6 in.:
⅝-in. & smaller 26
¾-in. through 1 in. . 4

SQUARE HEAD SET SCREWS
(Packaged; per cent off list)
1 in. diam x 6 in. and shorter 38
1 in. and smaller diam. x over 6 in. 26

HEADLESS SET SCREWS
(Packaged; per cent off list)
No. 10 and smaller 35
¼-in. diam. & larger.. 16
N.F. thread, all diams.. 10

RIVETS

F.o.b. midwestern plants
Structural ½-in., larger 7.85c
7/16-in. under ..... 36 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers—List to list-plus-$1

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 70%, $43; 60%, $40.
Imported, net ton, duty paid, metallurgical grade, $33-$35.

ELECTRODES

(Threaded, with nipples, unboxed f.o.b. plant)

GRAPHITE

Inches Diam.	Inches Length	Cents per lb
17,18,20	60,72	17.85
8 to 16	48,60,72	17.85
7	48,60	19.57
6	48,60	20.95

CARBON

35,40	110	8.03
30	65,84,110	8.03
24	72 to 104	8.03
17 to 20	34,90	8.03

STAINLESS STEEL

(Add 4.7% on base price and extras)

Type	Sheets	C.R. Strip	Bars Wire Structurals
301...	41.00	34.00	31.25
302...	41.25	36.75	31.50
303...	43.25	40.25	34.00
304...	43.25	38.75	33.00
309...	56.00	55.00	44.75
316...	57.00	59.00	49.25
321...	49.25	48.25	37.00
347...	53.75	52.25	41.50
410...	36.50	30.50	25.75
416...	37.00	37.00	26.25
420...	44.00	47.00	31.25
430...	39.00	31.00	26.25
501...	27.50	26.00	14.25
502...	28.50	27.00	15.25

Balt., Types 301-347 and 430 sheets, except 303 and 309 E2.
Brackenridge, Pa., sheets A4 quotes slight variations on Types 301-347.
Bridgeville, Pa., bars, wire, sheets & strip U4.
Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502, A10.
Carnegie, Pa., sheets and strip except Types 303, 416, 501 & 502 S18.
Cleveland, strip A7.
Detroit, strip M1 quotes 34.00c on Type 301; 36.50c, 302; 38.50c, 304; 58.50c, 316; 52.00c, 347; 30.50c, 410; 31.00c, 430.
Dunkirk, N. Y., bars, wire A4 quotes slight variations on Types 301-347.
Duquesne, Pa., bars U5.
Fort Wayne, Ind., bars and wire, except Types 501 & 502 J6 quotes slight variations on Types 301-347.
Gary, Ind., sheets except Type 416 U5.
Harrison, N. J., strip and wire C18.
Massillon, O., all items, R2.
McKeesport, Pa., strip, Type 410; bars & wire, Types 410 through 430 and 31.25c on Type 302, 33.75c on 303, 32.75c on 304, 48.75c on 316, 36.75c on 321, 41.25c on 347 F2.
McKeesport, Pa., bars, sheets except Type 416 U5.
Middletown, O., sheets and strip except Types 303, 416, 420, 501 and 502 A10.
Midland, sheets & strip C18.
Munhall, Pa., bars U5.
Muncie, Ind., wire I-7 quotes types 302, 304, 430.
Pittsburgh, sheets C18.
Reading, Pa., strip except 34.25c on Type 301 and 56.00c on 309; bars, except 31.50c on Type 301 and 45.25c on 309 C4.
Sharon, Pa., strip, except Types 303, 309, 416, 501, 502 and 34.25c on Type 301 S3.
So. Chicago, Ill., bars & structurals U5.
Syracuse, N. Y., bars, wire & structurals C18.
Titusville, Pa., bars U4.
Wallingford, Conn., strip W2 quotes 0.25c higher.
Washington, Pa., bars, sheets & strip, except 0.25c higher on Type 301 J3.
Washington, Pa., Types 301 through 347 sheets & strip except 303, 309; 316 sheets 62.00c, strip 64.00c W4.
Watervliet, N. Y., structurals & bars A4 quotes variations on Types 301-347.
Waukegan, bars & wire A7.
West Leechburg, Pa., strip, A4 quotes slight variations on Types 301-347.
Youngstown, strip except Types 303, 309, 316, 416, 501 and 502 and 34.25c on Type 301 C8.

COAL, CHEMICALS

Spot, cents per gallon, ovens
Pure benzol 30.00-35.00
Toluol, one deg...26.00-33.00
Industrial xylol . .25.00-33.50
Per ton bulk ovens
Sulphate of ammonia..$32-$45
Cents per pound, ovens
Phenol, 40 (carlots, non-returnable drums) ...17.25

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

Sponge iron: Cents
98+ % Fe, annealed. 18.00
Unannealed 14.50
Swedish, c.l.f. New York, in bags..8.85-9.95
Electrolytic iron:
Annealed, 99.5% Fe. 42.50
Unannealed (99 + % Fe) 36.50
Unannealed, 99 + % Fe (minus 325 mesh) 53.50
Powder Flakes 48.50
Carbonyl Iron:
97.9-99.8% size 5 to 10 microns ..83.00-148.00
Aluminum:
Carlots, freight allowed 31.00
Atomized, 500 lb drums, freight allowed 33.00
Antimony, 500 lb lots. 71.00
Brass, 20-ton lots.28.25-32.00
Bronze, 10-ton lots 51.25-60.00
Phosphor-Copper, 20-ton lots 50.00
Copper:
Electrolytic 37.25
Reduced 34.75
Lead 22.50
Magnesium 75.00-85.00
Manganese:
Minus 100 mesh 57.00
Minus 35 mesh 52.00
Minus 200 mesh 62.00
Nickel unannealed 86.00
Nickel-Silver 5-ton lots 44.50
Silicon 38.50
Solder (plus cost of metal) 8.50
Stainless Steel, 302.... 83.00
Zinc, 10-ton lots..20.00-28.00
Tungsten Dollars
Melting grade, 99% 60 to 200 mesh:
1000 lb and over.... 5.85
Less than 1000 lb .. 6.00
Molybdenum:
99.9%, minus 200 mesh 3.24
Chromium, electrolytic 99% Cr min. 3.50

METALLURGICAL COKE

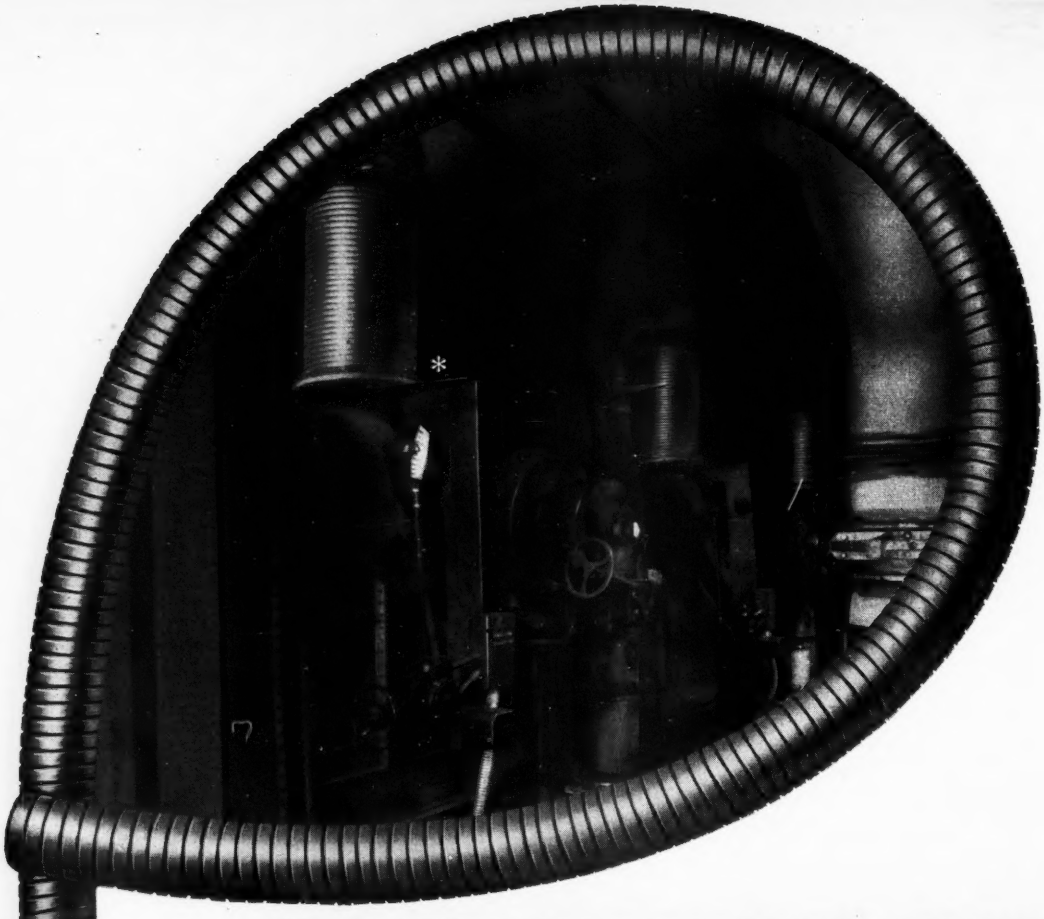
Price net ton

BEEHIVE OVENS

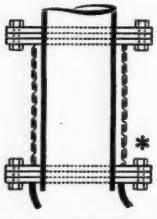
Connellsvil.fur. .$14.50-15.00
Connellsvil.fdy. ..16.50-17.50
New River foundry.... 20.80
Wise county, foundry.. 15.95
Wise county, furnace.. 15.20

OVEN FOUNDRY COKE

Kearney, N. J. ovens.$22.75
Everett, Mass., ovens New England, del...*24.80
Chicago ovens 23.00
Chicago, del. 24.50
Terre Haute, ovens.... 22.50
Milwaukee, ovens 23.75
Indianapolis, ovens ... 22.75
Chicago, del. 26.62
Cincinnati, del. 25.85
Detroit, del. 27.05
Ironton, O., ovens 22.50
Cincinnati, del. 25.12
Painesville, O., ovens. 24.00
Cleveland, del. 25.82
Erie, Pa., ovens 23.50
Birmingham, ovens .. 20.30
Cincinnati, del. 25.23
LoneStar,Tex., ovens.. 18.00
Philadelphia, ovens ... 22.70
NevilleIsland.Pa.,ovens 23.00
Swedeland, Pa., ovens. 22.60
St. Louis, ovens
St. Louis, del. 25.40
Portsmouth, O., ovens 22.50
Cincinnati, del. 25.12
Detroit, ovens 24.00
Detroit, del. 25.00
Buffalo, del. 26.58
Flint, del. 26.73
Pontiac, del. 25.56
Saginaw, del. 27.08
*Or within $4.55 freight zone from works.



HELPS "PIPE DANCE" IN BOILER OPERATION



(Cross-sectional view, showing Penflex tubing encasement on steel feed pipes from hopper.)

PENFLEX TUBING ABSORBS THERMAL EXPANSION

When a large public utility power plant fed powdered coal into burners of high-pressure steam boilers, thermal expansion moved steel feed tubes around, showering coal dust over equipment.

Penflex tubing was recommended as an outer protective encasement for the rigid steel tube that comes down from the hopper. Lengths of 20" & 24" I. D. interlocking, galvanized steel tubing were installed. Now the steel pipes from the hopper virtually "float" at one end when thermal expansion occurs. Penflex tubing forms a flexible seal between hopper and tube, assuring protected delivery of powdered fuel.

Let Penflex engineers help you on flexible tubing application problems. Penflex manufactures a complete line of four wall, interlocking and seamless welded corrugated flexible tubing . . . metallic hose, tubing or couplings from ⅛" I. D. and up . . . automatic barrel fillers, pneumatic rivet passers, accessories and fittings. Write for folder, "Flexineering," a valuable production aid.

Pennsylvania Flexible Metallic Tubing Company, Inc., 7219 Powers Lane, Phila. 34, Pa.
Branch Sales Offices: **Boston • New York • Chicago • Houston • Cleveland • Los Angeles**

penflex

HEART OF INDUSTRY'S LIFE LINES

Copyright 1951 Penna. Flexible Metallic Tubing Co., Inc.

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, for delivery within switching limits, subject to extras.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140††		Carbon	Floor
New York (city)	6.65	7.57	8.77	7.05	...	6.89	7.83	11.34‡	6.69	6.90	8.31
JerseyCity(c'try)	6.35	7.27	8.47	6.75	...	6.59	7.53	9.54	6.39	6.60	8.01
Boston (city) ..	6.71	7.55	8.74	6.75	...	6.48	7.74‡	10.80‡	6.76	7.00	8.18
Boston (c'try)..	6.51	7.35	8.54	6.55	...	6.28	7.54‡	10.60‡	6.56	6.80	7.98
Phila. (city) ...	6.35	7.38	8.60	6.70	8.55	6.67	7.69	11.02	6.42	6.49	7.62
Phila. (c'try) ..	6.10	7.12	8.35	6.45	8.30	6.42	7.44	10.77	6.17	6.24	7.36
Balt. (city) ...	6.01	7.37	8.62	6.62	...	6.61	7.62‡	11.37	6.52	6.67	7.90
Balt. (c'try) ..	5.81	7.17	8.42	6.42	...	6.41	7.42‡	11.17	6.33	6.47	7.70
Norfolk, Va. ..	7.60	...	...	...	...	6.44	8.45	...	7.25	6.64	7.33
Richmond, Va. .	6.14	6.95	8.68	6.53	...	6.30	7.38	...	6.58	6.68	7.80
Wash. (w'hse)..	6.31	7.61	8.90	6.89	...	6.90	7.78	...	6.93	6.95	8.17
Buffalo (del.)..	5.96	6.80	8.60	6.36	...	5.96	6.88	12.45	6.16	6.57	7.80
Buffalo (w'hse).	5.76	6.60	8.40	6.16	...	5.76	6.68	12.26	5.96	6.37	7.60
Pitts. (w'hse)..	5.80	...	8.45	5.97	...	5.83	6.90	10.65	5.95	6.12	7.18
Detroit (w'hse).	6.00-6.20	6.71-7.04	8.34	6.03-7.05	7.70-8.03	6.12-6.34	6.975-7.41	10.92	6.42-6.65	6.19-6.65	7.52-7.72
Cleveland (del.)	6.00	6.85	8.39	6.20	...	6.09	7.19‡	10.99	6.53	6.37	7.72
Cleve. (w'hse) .	5.80	6.65	8.19	6.00	...	5.89	6.99‡	10.79	6.33	6.17	7.52
Cincin. (city) ..	6.28	6.87	8.67	6.36	...	6.28	7.31	12.22	6.57	6.62	7.75
Chicago (city)..	6.03	6.88	8.25	6.03	...	6.11	7.12‡	10.85	6.15	6.22	7.38
Chicago (w'hse)	5.83	6.68	8.05	5.83	...	5.91	6.92‡	10.65	5.95	6.02	7.18
Milwau. (city) .	6.17	7.08	8.42	6.51	...	6.20	7.30‡	10.02	6.32	6.37	7.55
Milwau. (c'try).	5.97	6.88	7.22	6.31	...	6.00	7.10‡	10.82	6.12	6.17	7.35
St. Louis (del.)	6.30	7.15	8.55	6.68	...	6.33	7.40‡	11.15	6.55	6.60	7.78
St. L. (w'hse) .	6.10	6.95	8.35	6.48	...	6.13	7.20‡	10.95	6.35	6.40	7.58
Birm'hm (city).	5.95	6.80	7.85[3]	5.95	...	5.95	8.40	...	6.10	6.25	8.65
Birm'hm(w'hse)	5.80	6.65	7.70[3]	5.80	...	5.80	8.40	...	5.95	6.10	8.65
Los Ang. (city).	6.80	8.65	9.95	6.95	11.40	6.77	8.85	12.25	6.80	6.85	9.10
L. A. (w'hse)..	6.60	8.45	9.75	6.75	11.20	6.57	8.65	12.05	6.60	6.65	8.90
Seattle-Tacoma.	7.43	9.26	9.55	7.90	...	7.40	9.56	10.90‡	6.83	7.24	9.07
SanFran.(w'hse)	6.85	8.20[3]	9.55[3]	6.80	...	6.65	8.70	12.05	6.50	6.55	8.90

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ add 25-cent special bar quality extra; ‡ as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted. Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [3]—500 to 1499 lb; [3]—450 to 1499 lb.; [4]—1000 to 1999 lb.

Ores

Lake Superior Iron Ore

Gross ton, 51½% (natural), lower lake ports.

Old range bessemer	$9.45
Old range nonbessemer	9.30
Mesabi bessemer	9.20
Mesabi nonbessemer	9.05
High phosphorus	9.05

After adjustment for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 1, 1950, in applicable lake vessel rates, upper lake rail, freights, dock handling charges and taxes thereon.

Eastern Local Ore

Cents per unit del., E. Pa.

Foundry and basic 56-62% concentrates contract	17.00

Foreign Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	nom.
Long-term contract	24.00
North African hematites (spot)	26.00-28.00
Brazilian iron ore, 68-69% (spot)	32.00

Tungsten Ore

Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit	$65.00
Domestic scheelite, mines	65.00

Manganese Ore

Manganese, 48% nearby, $1.18-1.22 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 85c-87c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African	
48% 2.8:1	$39.00-42.00
48% 3:1	44.00-45.00
48% no ratio	30.00-32.00
South African Transvaal	
44% no ratio	$27.00-28.00
48% no ratio	34.00-35.00
Brazilian	
44% 25:1 lump	nom.
Rhodesian	
45% no ratio	$29.00
48% no ratio	31.50-32.00
48% 3:1 lump	50.00-51.00
Domestic—rail nearest seller	
48% 3:1	$39.00

Molybdenum

Sulphide concentrates per lb, molybdenum content, mines	$1.00

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 21.75c per lb of contained Cr c.l., packed 22.65c, ton lot 23.80c, less ton 25.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%) Contract, carload, lump, bulk, max. 0.03% C 33.60c per lb of contained Cr, 0.04% C 31.50c, 0.06% C 30.50c, 0.10% C 30.00c, 0.15% C 29.75c, 0.20% C 29.50c, 0.50% C 29.25c, 1% C 29.00c, 1.50% C 28.85c, 2% C 28.75c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High Carbon: (Cr 62-66%, C 5-7%). Contract, c.l. 8 M x D, bulk, 23.25c per lb of contained Cr. C.l., packed 24.15c, ton 25.50c, less ton 27.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max.) Contract, carload, packed, 8 M x D, 16.35c per lb of alloy; ton lot 17.2c; less ton lot, 18.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 21.75c per lb of contained chromium plus 12.4c per pound of contained silicon; 1" x down, bulk 21.90c per pound of contained chromium plus 12.60c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr 36-39%, Si 26-39%, Al 7-9%, C 0.05% max.) 21.75c per lb of contained silicon plus 12.4c per lb of contained silicon plus aluminum 3" x down, delivered.

Chromium Metal: (Min 97% Cr and 1% Fe) Contract carload, 1" x D; packed, max 0.50% C grade, $1.08 per lb of contained chromium ton lot $1.10, less ton $1.12. Delivered. Spot, add 5c.

SILICON ALLOYS

25.30% Ferrosilicon: Contract, carload, lump, bulk, 20.00c per lb of contained Si; packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12.40c per lb of contained Si, carload packed 14.0c, ton lot 15.45c, less ton 17.1c. Delivered. Spot, add 0.45c

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered. Spot, add 0.8c.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.0c per lb of contained Si, carload packed 18.2c, ton lot 19.15c, less ton 20.2c, Delivered. Spot, add 0.25c.

Silicon Metal: (Min 97% Si and 1% max Fe). C.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max, 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe.) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.90c per lb of alloy, ton lots packed 11.30c, 200 to 1999 lb 11.65c, smaller lots 12.15c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3.3-5% max). Contract, any quantity, $3.10 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 35-55%, Si 2-3.5% max, C 0.5-1% max), $3.20. **Primos and High Speed Grades** (V 35-55%, Si 1.50% max, C 0.20% max) $3.30.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot, add 5c. F.o.b. Washington, Pa., prices 100 lb and over are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump, carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

TUNGSTEN ALLOYS*

Ferrotungsten: (70-80%). 10,000 lb W or more, $4.85 per lb of contained W; 2000 lb W to 10,000 lb W, $4.95; less than 2000 lb W, $5.07, f.o.b. Niagara Falls, N. Y.

*Government ceiling prices, effective May 7, 1951, f.o.b. Niagara Falls, N. Y., basis.

NOTE: Current prices on manganese, titanium and "other ferroalloys" appeared on page 181 Sept. 15 issue; calcium, zirconium, briquetted alloys and refractories, page 165, Sept. 8.

CEILING PRICES, IRON AND STEEL SCRAP

Prices as set forth in Office of Price Stabilization ceiling price regulation No. 5, as amended Feb. 5, 1952.

STEELMAKING SCRAP COMPOSITE

Sept. 18	$43.00
Sept. 11	43.00
Aug., 1952	43.00
Sept., 1951	44.00
Sept., 1947	37.83

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

Basing point ceiling prices per gross ton from which maximum shipping prices are computed on scrap of dealer and industrial origin; and from which ceiling on-line and ceiling delivered prices are computed on scrap of railroad origin.

Grade 1 Basing Point	No. 1 Bundles Dealer, Industrial	No. 1 Heavy Melt Railroad
Alabama City, Ala.	$39.00	$41.00
Ashland, Ky.	42.00	44.00
Atlanta, Ga.	39.00	41.00
Bethlehem, Pa.	42.00	44.00
Birmingham, Ala.	39.00	41.00
Brackenridge, Pa.	44.00	46.00
Buffalo, N. Y.	43.00	45.00
Butler, Pa.	44.00	46.00
Canton, O.	44.00	46.00
Chicago, Ill.	42.50	44.50
Cincinnati, O.	43.00	45.00
Claymont, Del.	42.50	44.50
Cleveland, O.	43.00	45.00
Coatesville, Pa.	42.50	44.50
Conshohocken, Pa.	42.50	44.50
Detroit, Mich.	41.15	43.15
Duluth, Minn.	40.00	42.00
Harrisburg, Pa.	42.50	44.50
Houston, Tex.	37.00	39.00
Johnstown, Pa.	44.00	46.00
Kansas City, Mo.	39.50	41.50
Kokomo, Ind.	42.00	44.00
Los Angeles	35.00	37.00
Middletown, O.	43.00	45.00
Midland, Pa.	44.00	46.00
Minnequa, Colo.	38.00	40.00
Monessen, Pa.	44.00	46.00
Phoenixville, Pa.	42.50	44.50
Pittsburg, Calif.	35.00	37.00
Pittsburgh, Pa.	44.00	46.00
Portland, Oreg.	35.00	37.00
Portsmouth, O.	42.00	44.00
St. Louis, Mo.	41.00	43.00
San Francisco	35.00	37.00
Seattle, Wash.	35.00	37.00
Sharon, Pa.	44.00	46.00
Sparrows Pt., Md.	42.00	44.00
Steubenville, O.	44.00	46.00
Warren, O.	44.00	46.00
Weirton, W. Va.	44.00	46.00
Youngstown, O.	44.00	46.00

Differentials from Base

Differentials per gross ton for other grades of dealer and industrial scrap:

O-H and Blast Furnace Grade

2. No. 1 Busheling	Base
3. No. 1 Heavy Melting	—$1.00
4. No. 2 Heavy Melting	— 1.00
5. No. 2 Bundles	— 1.00
6. Machine Shop Turnings	—10.00
7. Mixed Borings and Short Turnings	— 6.00
8. Shoveling Turnings	— 6.00
9. No. 2 Busheling	— 4.00
10. Cast Iron Borings	— 6.00

Elec. Furnace and Fdry. Grades

11. Billet, Bloom & Forge Crops	+ 7.50
12. Bar Crops & Plate	+ 5.00
13. Cast Steel	+ 5.00
14. Punchings & Plate Scrap	+ 2.50
15. Electric Furnace Bundles	+ 2.00
Cut Structurals & Plate:	
16. 3 feet and under	+ 3.00
17. 2 feet and under	+ 5.00
18. 1 foot and under	+ 6.00
19. Briquetted Cast Iron Borings	Base
Foundry, Steel:	
20. 2 feet and under	Base
21. 1 foot and under	+ 2.00
22. Springs and Crankshafts	+ 1.00
23. Alloy Free Turnings	— 3.00
24. Heavy Turnings	— 1.00
25. Briquetted Turnings	Base
26. No. 1 Chemical Borings	— 3.00
27. No. 2 Chemical Borings	— 4.00
28. Wrought Iron	+10.00
29. Shafting	+10.00
31. Old Tin & Terne Plated Bundles	—10.00

Unprepared Grades

When compressed constitutes:

32. No. 1 Bundles	— 6.00
33. No. 2 Bundles	— 9.00
34. Other than material suitable for hydraulic compression	— 8.00

Restrictions on Use

(1) Prices for Grades 11 and 23 may be charged only when shipped to a consumer directly from an industrial producer; otherwise ceiling prices shall not exceed prices established for grades 12 and 8, respectively.

(2) Prices established for Grades 26 and 27 may be charged only when sold for use for chemical or annealing purposes, and in the case of Grade 27, for briquetting and direct charge into an electric furnace; otherwise ceiling prices shall not exceed price established for Grade 10.

(3) Prices established for Grade 28 may be charged only when sold to a producer of wrought iron; otherwise ceiling price shall not exceed ceiling price for corresponding grade of basic open-hearth.

(4) Premiums for Grades 11-18, 20 and 21 may be charged only when sold for use in electric and acid open-hearth furnaces or foundries; or in basic O-H or blast furnace under NPA allocation or OPS authorization.

(5) Prices for Grade 29 may be charged only when sold for forging or rerolling purposes.

Differentials from Base

Differentials per gross ton above or below the price of Grade 1 (No. 1 railroad heavy melting steel) for other grades of railroad steel scrap:

2. No. 2 Heavy Melting Steel	—$2.00
3. No. 2 Steel Wheel	Base
4. Hollow Bored Axles and loco. axles with keyways between the wheelseats.	Base
5. No. 1 Busheling	— 3.50
6. No. 1 Turnings	— 3.00
7. No. 2 Turnings, Drillings & Borings	—12.00
8. No. 2 Cast Steel and uncut wheelcenters	— 6.00
9. Uncut Frogs, Switches.	Base
10. Flues, Tubes & Pipes	— 8.00
11. Structural, Wrought Iron and/or/steel, uncut	— 6.00
12. Destroyed Steel Cars	— 8.00
13. No. 1 Sheet Scrap	— 9.50
14. Scrap Rails, Random Lengths	+ 2.00
15. Rerolling Rails	+ 7.00
Cut Rails:	
16. 3 feet and under	+ 5.00
17. 2 feet and under	+ 6.00
18. 18 inches and under	+ 8.00
19. Cast Steel, No. 1	+ 3.00
20. Uncut Tires	+ 2.00
21. Cut Tires	+ 5.00
Bolsters & Side Frames:	
22. Uncut	Base
23. Cut	+ 3.00
24. Angles, Splice Bars & Tie Plates	+ 5.00
25. Solid Steel Axles	+12.00
26. Steel Wheels, No. 3. oversize	Base
27. Steel Wheels, No. 3	+ 5.00
28. Spring Steel	+ 5.00
29. Couplers & Knuckles	+ 5.00
30. Wrought Iron	+ 8.00
31. Fireboxes	— 8.00
32. Boilers	— 6.00
33. No. 2 Sheet Scrap	—13.00
34. Carsides, Doors, Car Ends, cut apart	— 6.00
35. Unassorted Iron & Steel	— 6.00
36. Unprepared scrap, not suitable for hydraulic compression	— 8.00

Preparation Charges

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of dealer or industrial origin, authorized by OPS are:

(1) For preparing into Grades No. 3, No. 4 or No. 2, $8.
(2) For hydraulically compressing Grade No. 1, $6 per ton; Grade No. 5, $8.
(3) For crushing Grade No. 6, $3. For preparing into:
(4) Grade No. 25, $6.
(5) Grade No. 19, $6.
(6) Grades No. 12, No. 13, No. 14, No. 16, or No. 20, $10.
(7) Grade No. 17 or No. 21, $11.
(8) Grade No. 18, $12.
(9) For hydraulically compressing Grade No. 15, $8.
(10) For preparing into Grade No. 28, $10.

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of railroad origin shall be:

(1) For preparing into Grade No. 1 and Grade No. 2, $8.
(2) For hydraulically compressing Grade No. 13, $6.

For preparing into:

(3) Grade No. 16, $4.
(4) Grade No. 17, $5.
(5) Grade No. 18, $7.
(6) Grade No. 21, $4.
(7) Grade No. 23, $4.

Ceiling fees per gross ton which may be charged for intransit preparation of cast iron are limited to:

(1) For preparing Grade No. 8 into Grade No. 7, $9.
(2) For preparing Grade No. 3 into Grade No. 11, $7.
(3) For preparing Grade No. 3 into Grade No. 1, $4.

CAST IRON SCRAP

Ceiling price per gross ton for following grades shall be f.o.b. shipping point:

Cast Iron:

1. No. 1 (Cupola)	$49.00
2. No. 2 (Charging Box)	47.00
3. No. 3 (Hvy. Breakable).	45.00
4. No. 4. (Burnt Cast)	41.00
5. Cast Iron Brake Shoes.	41.00
6. Stove Plate	46.00
7. Clean Auto Cast	52.00
8. Unstripped Motor Blocks	43.00
9. Wheels, No. 1	47.00
10. Malleable	55.00
11. Drop broken machinery.	52.00

OPEN MARKET

(Delivered prices include broker's commission.)

Birmingham
(Delivered)

No. 1 Cupola Cast	$45.00-46.00
Stove plate	41.00-42.00
Charging box cast	39.00-40.00
Heavy breakable	36.00-37.00
Drop broken machinery	42.00-43.00
Unstripped motor blocks	35.00-36.00

Boston
(F.o.b. shipping point)

No. 1 cupola cast	40.00
Heavy breakable	36.00
Stove plate	34.00-35.00
Unstripped motor blocks	30.00

Buffalo
(Delivered)

No. 1 heavy melting	43.00
No. 2 heavy melting	43.00
No. 1 bundles	44.00
No. 1 busheling	44.00
No. 2 bundles	43.00
Machine shop turnings	34.00
Mixed borings, turnings	38.00
Cast iron borings	38.00
Short shoveling turnings	38.00
No. 1 cupola cast	47.00-49.00
No. 1 machinery cast	49.00-50.00

Chicago
(Delivered)

No. 2 heavy melting	42.50
No. 2 bundles	42.50
Machine shop turnings.	33.50
Mixed borings, turnings	37.50
Shoveling turnings	37.50
Cast iron borings	37.50
No. 1 cupola cast	49.00-51.00
Charging box cast	47.00-48.00
Heavy breakable	47.00-48.00
Burnt cast	41.00-42.00
Cast iron brake shoes.	42.00-43.00
Stove plate	45.00-47.00
Clean auto cast	55.00-56.00
Unstripped motor blocks	39.00-40.00
Malleable	60.00-61.00
Drop broken machinery	55.00-57.00

Cleveland
(Delivered)

No. 1 heavy melting	43.00
No. 2 heavy melting	43.00
No. 1 bundles	44.00
No. 2 bundles	43.00
Machine shop turnings	34.00
Mixed borings, turnings	38.00
Shoveling turnings	38.00
Cast iron borings	38.00
(F.o.b. shipping point)	
No. 1 cupola	49.00
Charging box cast	47.00
Burnt cast	41.00
Stove plate	46.00
Clean auto cast	52.00
Unstripped motor blocks	43.00
Malleable	55.00
Drop broken machinery	52.00

Detroit
(F.o.b. shipping point)

No. 1 cupola cast	49.00†
Heavy breakable	45.00†
Clean auto cast	52.00†
Unstripped motor blocks	43.00†
Drop broken machinery	52.00†
Charging box cast	47.00†

†Ceiling price.

Los Angeles
(Delivered)

No. 2 bundles	29.00
No. 1 cupola cast	49.00

New York
(Brokers' buying prices)

No. 2 heavy melting	35.99
Mixed borings, turnings	29.99
Machine shop turnings.	25.99
Cupola cast	42.00-43.00
Unstripped motor blocks	36.00-37.00

Philadelphia

No. 1 heavy melting	41.50†
No. 2 heavy melting	41.50†
No. 1 bundles	42.50†
No. 2 bundles	41.50†
No. 1 busheling	42.50†
Mixed borings, turnings	36.50†
Machine shop turnings.	32.50†
Short shoveling turnings	36.50†
No. 1 cupola cast	46.00-48.00††
Unstripped motor blocks	41.00††
Heavy breakable	45.00†
Machinery cast	52.00†

†Ceiling price. ‡Nominal.
§Shipping point. ††Delivered.

Pittsburgh
(Delivered)

No. 2 heavy melting	44.00†
No. 1 bundles	45.00†
No. 2 bundles	44.00†
Machine shop turnings.	35.00†
Shovel turnings	39.00†
No. 1 cupola cast	48.50
Heavy breakable	45.00

†Ceiling price.

San Francisco
(Delivered)

No. 2 heavy melting	31.00
Machine shop turnings.	18.00
No. 2 bundles	29.00
No. 1 cupola cast	46.00

Seattle
(F.o.b. shipping point)

No. 1 cupola cast	44.00
Heavy breakable	40.00
Unstripped motor blocks	38.00

St. Louis
(Delivered)

No. 1 cupola	41.00
Unstripped motor blocks	39.00

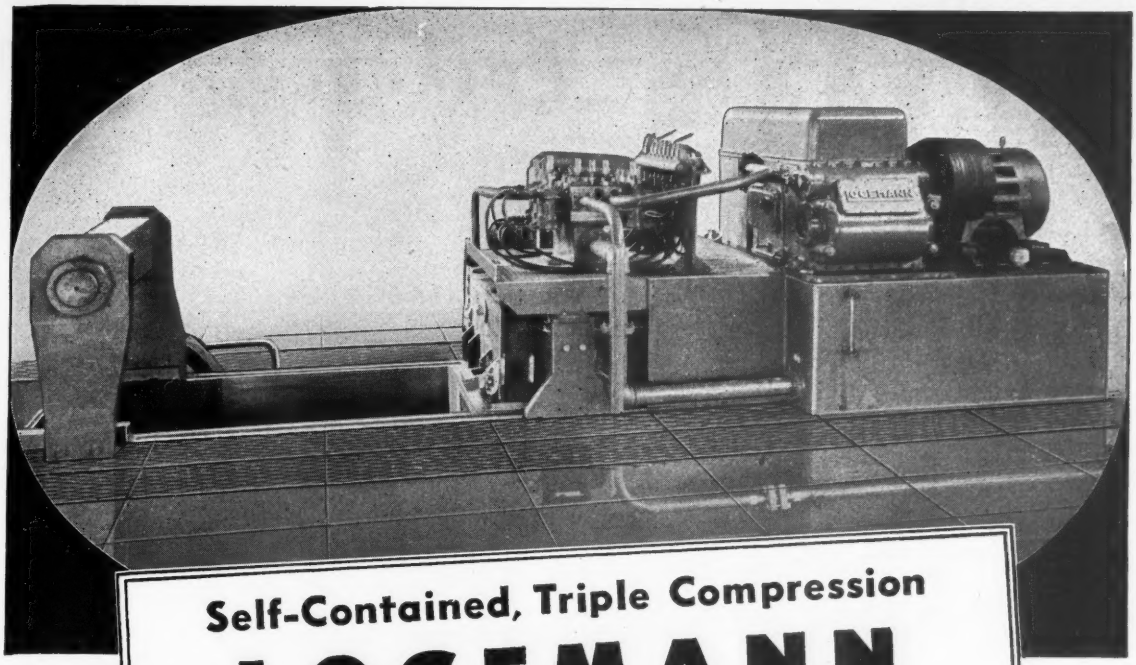
Youngstown
(Delivered)

No. 2 heavy melting	43.00
No. 2 bundles	43.00
Machine shop turnings.	34.00

HAMILTON, ONT.
(Delivered Prices)

Heavy Melt.	$35.50
No. 1 Bundles	35.50
No. 2 Bundles	35.50
Mechanical Bundles	32.00
Mixed Steel Scrap	31.50
Mixed Borings, Turnings	32.50
Rails, Remelting	35.50
Rails, Rerolling	44.80
Busheling	30.00
Busheling new factory:	
Prep'd	33.50
Unprep'd	31.50
Short Steel Turnings	32.50
Cast Iron Grades†	
No. 1 Machinery Cast	50.00

† F.o.b., shipping point.



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Here is a combination of tried and tested units expertly assembled to reduce floor space requirements to a minimum. Features include a big box, high speed operation, and high density bales. Various box sizes are available to meet maximum scrap and minimum bale dimensions.

Also available are various sizes and types of pumps and operating valves to meet output requirements. Logemann Scrap Presses can be equipped with loading hopper in which the scrap charge can be prepared while the press is going through the operations on the preceding bale. Compressed bales are delivered at floor level for ejection to conveyor, steel chute, or into accumulation pit.

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The NAZEL Hammer can be started or stopped at the mere push of a button, and it uses power *only when working* (think what this means in comparison with other types of hammers).

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1836

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WILMINGTON 99, DELAWARE

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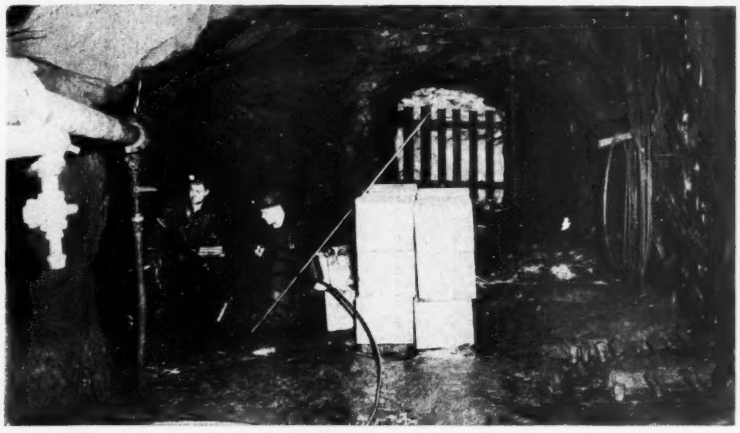
1952



Inco Moves Operations Underground

Because surface mining is reaching the predetermined depth at which it is no longer economical, International Nickel Co. of Canada Ltd. is making the transition to all-underground mining. The long-range conversion program, scheduled for completion next year, will cost $150 million. Then Inco will be able to hoist 13 million tons of ore a year. At left, miners are loading blastholes with powder in preparation for a blast that sent 225,000 tons of footwall ore to the 600-foot underground mine level. A gaping hole is left in the wall of the pit, at right, after the charge went off. The ore, which is lower grade than Inco has ever mined, is concentrated at the mine site

A good sign that metal shortages are about over is the effort being made to regain markets and to discourage use of substitutes

ANTI-SUBSTITUTION campaigns, lacking the magnitude but not the fervency of their political brethren, are in full swing.

Listen to a copper man tell you the virtues of his product. Hear aluminum salesmen revel in the light metal's myriad applications. Read the outpourings of lead and zinc producers scotching references to scarcity and high price. Increased tempo of their efforts points up approach of a new period of readjustment. It's time to consolidate footholds in new markets, to try to regain temporarily lost ones and to expand framework of application for "the favored metal."

Eyes on the Horizon—Not everyone is worrying about today, as witness full October order books for any kind of copper at most any prices. Eyes are on tomorrow's markets, which must be shaped today.

A basic reason aluminum producers want the government to hold off stock-piling until closer balance arrives is to build up gradually the curtailed civilian uses of aluminum. They shudder to think of suddenly finding imposing tonnages to dispose of without first setting the stage. The copper industry, likewise, would like to be able to tell customers about future prices, and get the problem solved before supply catches demand. Some sort of order would certainly help the industry. With a multiplicity of price ceilings in effect today, the whole situation is a joke, but not funny to people who have to sell copper.

Crumbling Dike—The way is clear for other copper producers to get Capehart price adjustments since Calumet & Hecla's petition for a 27.5-cent price on its lake copper was approved. The dike holding back domestic price is crumbling surely, and decontrol of all domestic copper prices may be the only way out for a harried OPS. It seems the only move left to that agency.

Yet the government continues efforts at "stability" in the market. The stockpile has long been used as a tempering influence. Now GSA is sending out feelers to lead and zinc people on how much metal they could offer in the next six months or year. Requests for lead offerings extend through next March, for zinc through next September. Producers are asked to specify tonnage of domestic and foreign metal offered, and the price would be firm or market price at delivery date. Both metals are firm pricewise—zinc at its new level of 14.5 cents, lead at 15.8 cents.

Aluminum warehouses are gradually getting better balance in stocks, with the exception of popular sizes of sheet. High alloy and heat treatable types are much harder to get than common alloy. Wire rods and bars have improved decidedly, particularly in larger sizes, but extrusions and tubing remain short in most places. Warehouses generally have a little over half of their pre-Korea inventory back now, but their stocks include infrequently-ordered items. Rod and bar is moving to the military in sizable amounts. Sheets, used more for civilian applications, are short because rod requirements must be filled first.

Labor Peace Returning

Peace is coming slowly to the strike-tossed brass industry of Connecticut. American Brass Co. reached agreement with CIO-UAW for an 11-cent wage increase retroactive to last October, plus another four cents due this October and an escalator clause that gives another two cents hourly. The ABC settlement follows on the heels of peace at Waterbury Rolling Mills and A. H. Wells Co. and rumors of success soon at other area mills.

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 24.50c, Conn. Valley; Lake 24.62½c, delivered.

Brass Ingots: 85-5-5-5 (No. 115) 27.25c, 88-10-2 (No. 215) 40.00c; 80-10-10 (No. 305) 33.00c; No. 1 yellow (No. 405) 23.25c.

Zinc: Prime western 14.00c; brass special 14.25c; intermediate 14.50c, East St. Louis; high grade 15.35c, delivered.

Lead: Common 15.80c; chemical 15.90c; corroding 15.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 20.00c, pigs 19.00c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 20.50c; No. 12 foundry alloy (No. 2 grade) 19.50c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 18.80c; grade 2, 18.60c; grade 3, 18.40c; grade 4, 18.20c.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt 121.50c.

Antimony: American 99-99.8% and over but not meeting specifications below 39.00c; 99.8% and over (arsenic 0.05% max., other impurities 0.1% max.) 39.50c; f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 56.50c; 25-lb pigs, 59.15c; "XX" nickel shot, 60.15c; "F" nickel shot or ingots, for addition to cast iron, 56.50c. Prices include import duty.

Mercury: Open market, spot, New York, $187-$190 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $1.56 per lb of alloy, f.o.b. Reading, Pa.

Cadmium: "Regular" straight or flat forms, $2.00 del; special or patented shapes $2.15.

Cobalt: 97.99%, $2.40 per lb for 500 lb (kegs); $2.42 per lb for 100 lb (case); $2.47 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York 83.25c per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $23-$24 per troy ounce.

Iridium: $200 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Ceiling prices, cents per pound, f.o.b. mill, effective July 1, 1952)

Sheet: Copper 45.52; yellow brass 40.17; commercial bronze, 95% 45.15; 90% 44.38; red brass, 85% 43.10; 80% 42.34; best quality, 41.35; nickel silver, 18%, 55.08; phosphor-bronze grade A, 5%, 64.71.

Rod: Copper, hot-rolled 41.37; cold-drawn 42.62; yellow brass free cutting, 33.85; commercial bronze 95%, 44.84; 90% 44.07; red brass 85%, 42.79; 80%, 42.03.

Seamless Tubing: Copper 45.56; yellow brass 43.18; commercial bronze, 90%, 47.04; red brass, 85%, 46.01.

Wire: Yellow brass 40.46; commercial bronze, 95%, 45.44; 90%, 44.67; red brass, 85%, 43.39; 80%, 42.63; best quality brass, 41.64.

(Base prices, effective July 1, 1952)

Copper Wire: Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 32.795; 30,000 lb lots, 32.92; l.c.l., 33.42. Weatherproof, 100,000 lb, 33.60; 30,000 lb, 33.85; l.c.l., 34.35. Magnet wire del., 15,000 lb or more, 38.75; l.c.l., 39.50.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders. Effective Aug. 4, 1952.)

Sheets and Circles: 2s and 3s mill finish c.l.

Thickness Range Inches	Widths or Diameters, In., Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	31.6	...	...
0.135-0.096	12-48	32.1	...	...
0.095-0.077	12-48	32.8	30.6	34.9
0.076-0.061	12-48	33.4	30.8	35.1
0.060-0.048	12-48	33.7	31.0	35.4
0.047-0.038	12-48	34.1	31.3	35.7
0.037-0.030	12-48	34.5	31.7	36.3
0.029-0.024	12-48	35.1	32.0	36.8
0.023-0.019	12-36	35.7	32.7	37.5
0.018-0.017	12-36	36.4	33.3	38.4
0.016-0.015	12-36	37.3	34.0	39.5
0.014	12-24	38.3	35.0	40.8
0.013-0.012	12-24	39.3	35.7	41.7
0.011	12-24	40.3	36.8	43.3
0.010-0.0095	12-24	41.4	37.9	44.8
0.009-0.0085	12-24	42.6	39.1	46.6
0.008-0.0075	12-24	44.0	40.3	48.4
0.007	12-18	45.5	41.7	50.6
0.006	12-18	47.0	43.1	55.4

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	—Round— R317-T4 17S-T4	—Hexagonal— R-317-T4	—Hexagonal— 17S-T4
0.125	54.6	....	....
0.156-0.0188	46.2	....	....
0.219-0.313	43.6	....	....
0.375	42.0	48.3	50.4
0.406	42.0	....	....
0.438	42.0	48.3	50.4
0.469	42.0	....	....
0.500	42.0	48.3	50.4
0.531	42.0	....	....
0.563	42.0	....	47.3
0.594	42.0	....	....
0.625	42.0	45.7	47.3
0.688	42.0	....	47.3
0.750-1.000	41.0	43.1	44.6
1.063	41.0	....	43.1
1.125-1.500	39.4	41.5	43.1
1.563	38.9	....	....
1.625	38.3	....	41.5
1.688-2.000	38.3	....	....

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more $21.00 per cwt; add 50c cwt 100 sq ft to 140 sq ft. Pipe: Full coils $21.00 per cwt. Traps and bends: List prices plus 50%.

ZINC

Sheets 23.00c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 21.25c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 22.50c; over 12-in., 22.50-23.00c.

"A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 77.00c. Strip, cold-rolled, 83.00c. Rods and shapes, 73.00c. Plates, 75.00c. Seamless tubes, 106.00c.

MONEL

(Base prices f.o.b. mill)

Sheets, cold-rolled 60.50c. Strip, cold-rolled 63.50c. Rods and shapes, 58.50c. Plates, 59.50c. Seamless tubes, 93.50c. Shot and blocks, 53.50c.

MAGNESIUM

Extruded Rounds 12 in. long, 1.31 in. in diameter, less than 25 lb, 55.00-62.00c; 25 to 99 lb, 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

TITANIUM

(Prices per lb 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

Plating Materials

Chromic Acid: 99.9% flakes, f.o.b. Philadelphia, carloads 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat, rolled, 38.34c; oval 37.84c.

Nickel Anodes: Rolled oval, carbonized, carloads, 74.50c; 10,000 to 30,000 lb 75.50c; 3000 to 10,000 lb 76.50c; 500 to 3000 lb 77.50c; 100 to 500 lb, 79.50c; under 100 lb, 82.50c; f.o.b. Cleveland.

Nickel Chloride: 36.50c in 100 lb bags; 34.50c in lots of 300 lb through 10,000 lb; 34.00c over 10,000 lb, f.o.b. Cleveland, freight allowed on 300 lb or more.

Sodium Stannate: 25 lb cans only, less than 100 lb to consumers 86.7c; 100 or 350 lb drums only, 100 to 600 lb 71.60c; 700 to 1900 lb, 69c; 2000 to 9900 lb, 67.3c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Tin Anodes: Bar, 1000 lb and over, $1.42; 500 to 999 lb, $1.425; 200 to 499 lb, $1.43; less than 200 lb, $1.445. Freight allowed east of Mississippi and north of Ohio and Potomac.

Zinc Cyanide: 100 lb drums, less than 10 drums 54.30c, 10 or more drums, 52.30c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb $1.11; more than 2000 lb, $1.09. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Stannous Chloride (Anhydrous): In 400 lb bbl, 98.5c; 100 lb kegs 99.5c. Freight allowed.

Scrap Metals

Brass Mill Allowances

Ceiling prices in cents per pound for less than 20,000 lb, f.o.b. shipping point, effective June 26, 1951.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	21.50	21.50	20.75
Yellow Brass	19.125	18.875	17.875
Commercial Bronze			
95%	20.50	20.25	19.75
90%	20.50	20.25	19.75
Red Brass			
85%	20.25	20.00	19.375
80%	20.125	19.875	19.375
Muntz metal	18.125	17.875	17.375
Nickel silver, 10%	21.50	21.25	10.75
Phos. Bronze, 5%	25.25	25.00	24.00

Copper Scrap Ceiling Prices

(Base prices, cents per pound, less than 40,000 lb f.o.b. point of shipment)

Group 1: No. 1 copper 19.25; No. 2 copper wire and mixed heavy 17.75; light copper 16.50; No. 1 borings 19.25; No. 2 borings 17.75; refinery brass, 17.00 per lb of dry Cu content for 50 to 60 per cent material and 17.25 per lb for over 60 per cent material. Group II: No. 1 soft red brass solids 18.50; No. 1 composition borings 19.25 per lb of Cu content plus 63 cents per lb of tin content; mixed brass borings 19.25 per pound of Cu content plus 60 cents per lb of tin content; unlined red car boxes 18.25; lined red car boxes 17.25; cocks and faucets 16.00; mixed brass screens 16.00; zincy bronze solids and borings 16.25.

Aluminum Scrap Ceiling Prices

(Cents per pound, f.o.b. point of shipment, less than 5000 lb)

Segregated plant scrap: 2s solids, copper free, 10.50; high grade borings and turnings, 8.50; No. 12 piston borings and turnings, 7.50. Mixed plant scrap: Copper-free solids, 10.00; dural type, 9.00. Obsolete scrap: Pure old cable, 10.00; sheet and sheet utensils, 7.25; old castings and forgings, 7.75; clean pistons, free of struts, 7.75; pistons with struts, 5.75.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Lead: Heavy 12.50-12.75; battery plates 7.00-7.50; linotype and stereotype 13.50-14.00; electrotype 12.00-12.50; mixed babbitt 14.50-14.75.

Zinc: Old zinc, 6.00-6.50; new die cast scrap, 6.00-6.50; old die cast scrap, 4.75-5.00.

DAILY PRICE RECORD

1952	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Sept. 18	24.50	15.80	14.00	121.50	20.00	39.00	56.50	83.25
Sept. 12-17	24.50	15.80	14.50	121.50	20.00	39.00	56.50	83.25
Sept. 2-11	24.50	15.80	14.00	121.50	20.00	39.00	56.50	83.25
Aug. Avg.	24.50	15.80	14.067	121.50	19.923	39.00	56.50	83.25
July Avg.	24.50	15.80	15.00	121.50	19.00	39.00	56.50	82.885
June Avg.	24.50	15.06	15.74	121.50	19.00	39.00	56.50	82.75
May Avg.	24.50	15.519	19.50	121.50	19.00	42.077	56.50	85.356
Apr. Avg.	24.50	18.723	19.50	121.50	19.00	49.077	56.50	88.00
Mar. Avg.	24.50	18.80	19.50	121.50	19.00	50.00	56.50	88.00
Feb. Avg.	24.50	18.80	19.50	121.50	19.00	50.00	56.50	88.00
Sept. 1951 Avg.	24.50	16.80	17.50	103.00	19.00	42.00	56.50	90.16
Sept. 1947 Avg.	21.50	14.825	10.50	80.00	15.00	33.00	35.00	....

NOTE: Copper: Electrolytic, del. Conn. Valley, Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked. Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

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IT PAYS TO SPECIFY

SPEEDY, DEPENDABLE...

"TRICLENE" D Trichlorethylene is the result of over 20 years of research and practical experience in the degreasing field. Made under carefully controlled conditions by the pioneer manufacturer of degreasing solvents in the U. S., each shipment of "Triclene" D is carefully pretested for stability and purity... must meet test standards higher than those established by military and federal specifications (MIL-7003 and O-T-634). Yet "Triclene" D costs no more than other leading brands of degreasing solvents.

"Triclene" D is available nationally in 55 gallon drums and tank cars of various sizes. Distribution points in over 100 principal cities are ready to serve you with prompt deliveries. And trained Du Pont technical representatives with broad experience in the field will be happy to work closely with you in keeping your degreasing installations operating at peak efficiency.

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Send for your copy of "Vapor Degreasing with Du Pont Non-Flammable Solvents." It shows you how and where "Triclene" D can be used to save time and cut costs in metal cleaning.

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Please send me detailed information on Vapor Degreasing: applications, advantages, equipment used . . . and more facts on Du Pont "Triclene" D. We are interested in cleaning____products.

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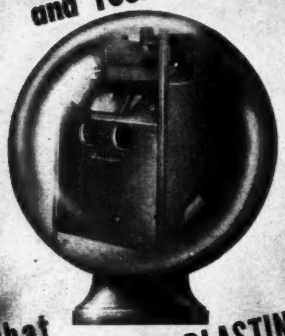

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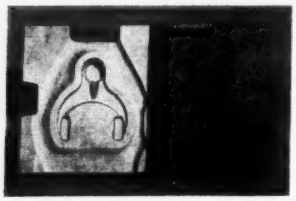
The cost of close tolerance finishing can vary almost as much as the weather. Through development of wet blasting, large savings have been made possible in finishing costs . . . and now Liquamatte makes wet blasting EVEN MORE practical, economical and convenient. The Liquamatte has 14 advanced design features that overcome the many



Typical heat treated forging die, one half of which has been cleaned with the Liquamatte using a fine mesh Liquabrasive.

operating difficulties usually found in wet blasting. Thus it reduces finishing costs to the very minimum. With the Liquamatte, "hand" finishes are produced mechanically in a matter of seconds, eliminating many tedious operations. Precision parts can be processed while holding tolerances of .0001". Scale and directional grinding lines are uniformly removed, greatly prolonging the life of expensive tools and dies.

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American

WHEELABRATOR & EQUIPMENT CORP.

509 S. Byrkit Street, Mishawaka, Ind.

Sheets, Strip . . .

Sheet and Strip Prices, Page 217 & 218

Cleveland—With the mills booked into first quarter of next year and tight supply conditions expected to continue until such time as backed-up military and other defense needs are fully satisfied, pressure for new sheet tonnage is not as strong as might be expected. Civilian goods makers, assured of getting at least minimum supplies, and aware of the position of the mills, generally are resigned to await developments, especially in view of the fact government restrictions limit inventories to 30 days. Some pickup in supply interest on the part of household appliance manufacturers is noted, reflecting rising activity in this area of steel consumption. Tappan Stove Co. is recalling furloughed employees and plans to step up production at its Mansfield, O. plant, increasing output of gas and electric ranges by 20 per cent.

Boston—Narrow cold-rolled strip users can place orders for low and high carbon material for late November shipment. Heavy deliveries of carbon sheets have enabled more metalworking shops to resume capacity operations but inability to place full fourth quarter requirements point to tight supply through balance of this year. Builders of household tanks could use more No. 12 gage hot-rolled. Availability of specialties varies.

New York—Warehouses have better inventories of hot-rolled strip and are disinclined to take new orders. Tin mill suppliers are trending toward normalcy quickly. Inquiries for sheets have mounted. Some producers are open for government business on strip this year and most likely will have space for more civilian orders after "evaluating their position" in early October. Anything with a rating will be accepted in December; how much without ratings depends on the military appetite. Pickup in most civilian lines has bolstered business.

Philadelphia—Spots may open in some sheet schedules in fourth quarter if military set-asides prove as top-heavy as suspected. Narrow strip will be first to see daylight. Straight chrome stainless demand holds up better than expected, but tonnage should be readily available in another month. Cold-rolled sheets are looser than hot-rolled, but supplies of both do not match demand.

Pittsburgh—Sheet and strip consumers are happy about the larger-than-expected volume of orders being received. Evidence of continuing demand is found in the fact one producer is a month and a half oversold on orders received for fourth quarter.

Sparrows Point, Md.—Mill to be built here by the Thompson Wire Co., Boston, will be devoted to production of cold-rolled strip, carbon and alloy, up to 16-in wide. Equipment will include a 4-high reversing mill with gas and electric annealing installations.

Los Angeles—Deliveries of Japanese galvanized sheets are being made through brokers at prices $35 above the domestic market.

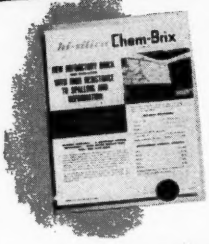
NEW

TYPE BRICK Increases FURNACE REFRACTORY LIFE!

In actual use for over two years, *chemically* bonded Hi-Silica Chem-Brix have proved to be superior to kiln-fired brick. When exposed to elevated temperatures in open hearth checker chambers, heating furnaces and soaking pits, Hi-Silica Chem-Brix develop a protective surface glaze that is high in silica. This exposed surface expands slightly, tightens the joints and seals out fluxing agents. Longer refractory life is assured—resulting in lower costs!

FOR HIGHER RESISTANCE TO SPALLING AND DEFORMATION look to...

hi-silica Chem-Brix



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SINCE 1911

Illinois Clay Products Company

JOLIET, ILLINOIS

Wire . . .

Wire Prices, Page 219

Boston—Wire producers are rapidly catching up with overdue tonnage and will be current on most products by mid-fourth quarter. Selling job is required to move rope wire, card wire, and numerous high carbon specialties.

Steel Bars . . .

Bar Prices, Page 217

Boston—Most bar mill schedules are filled for fourth quarter, carryovers and military set-asides taking available space. Alloy bar orders with high ratings are being booked for first quarter. Forging stock is sold into next year, a large ratio of orders being for defense.

New York—Cold drawers complain of empty storage bins though they've been getting 120 per cent of base tonnage. Sales offices will have no trouble disposing of quotas on bars in first quarter. Order books for carbon bars open Oct. 1.

Philadelphia—Slight but insignificant easing is detected in small diameter bars. The military take of large sizes, particularly cold-finished for shell parts and components, shows no sign of letup. Area forge shops are doing well. Bolt manufacturers find 1-in. and smaller bars as tough to get as ever, with ⅞-in. particularly critical.

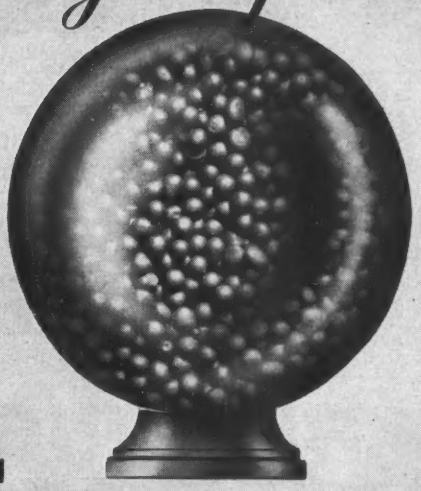
Pittsburgh—Steel bar supply picture is brighter in the small diameters. Big rounds remain in heavy demand with the lion's share of output going to the military.

Cleveland—Barring downward readjustment in defense requirements for bars, supplies for the merchant trade are expected to continue tight beyond first quarter next year. Indications are any openings that may appear in rolling schedules will be quickly filled so there is little prospect for a buyer to pick up much additional tonnage.

Seattle—Rolling mills here report firm demand for small tonnages. Backlogs are substantial. Reinforcing bars are in chief demand. Fabricated bars to consumers have been advanced 25 cents per 100 pounds to $5.80.

Washington—National Production Authority expects military requirements for steel bars to increase for at least the next nine months before beginning to level off. That's what members of the Cold-Finished Carbon & Alloy Bar Industry Committee were told at their Sept. 16 meeting with NPA officials. Consequently, the military set-aside of 40 per cent of production will be continued indefinitely. Study of military demands is being made to see if the bulge in such, which creates unbalanced mill operations, can be leveled off. Plans call for complete and current information on inventory, production and needs for military facilities. Scaling down of the military set-aside would provide some relief in meeting defense-supporting and civilian orders. Warehouse bar inventories are in poor shape.

TRU-STEEL SHOT
and *your future*



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PERFECTED TRUE STEEL SHOT means to you

Like everyone else you are interested in lowering cleaning room costs and Tru-Steel Shot has a place in your future. That's because Tru-Steel Shot is setting new records for longer life and lower blast cleaning costs. It is reducing handling costs and maintenance time. WHY? Because Tru-Steel NEVER SHATTERS.

Industry has long been searching for an abrasive that won't shatter because doing so ends its effective cleaning life. Annealing and drawing have been tried with some degree of success. But only a true steel shot never shatters. TRU-STEEL has the toughness that only steel can give. Then to make it even more durable, Tru-Steel is *fully heat treated,* not just drawn and annealed. As a result, Tru-Steel lasts longer, cleans faster . . . costs less in the long run.

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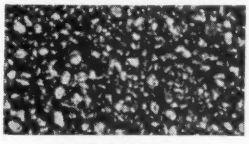

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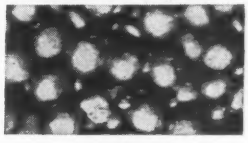

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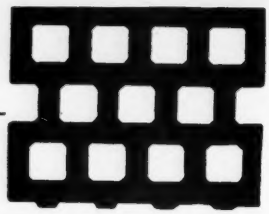

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Reinforcing Bars . . .

Reinforcing Bar Prices, Page 217

Boston—Concrete steel bar fabricators are sold far ahead, but have spot openings for medium-size tonnages at six to eight weeks delivery. Increase of $5 per ton is being passed on by contractors, average cost quoted for bars in place being close to 12 cents per pound.

Plates . . .

Plate Prices, Page 217

Philadelphia—The Coatesville producer's 120-in. mill is operating again, but the mill at Claymont, Del., suffered a week's setback and now aims to resume production Oct. 1. Of new rated orders for plates B-5s are heavy, followed by A-1s and other ratings. Shipyards with Navy work are doing all right, but yards without such contracts, boiler and tank manufacturers, and small fabricators are pinched. If space develops in rolling schedules it will be given to December magic numbers M-1, M-6 and carryover. Railroads may have a bigger year in 1953 in actual, not programmed, production than in either the two preceding years.

Boston—Unless jobs are covered by top priorities, shops are unable to place fourth quarter plate orders. Substantial volume takes Z-2 ratings, including weldment shop tonnage. New weldment orders are off and progress is being made in lowering backlogs. Machine tool and rolling mill equipment orders are off.

New York—Defense deliveries will tie up plate producers well into next year. Unless the military take is reduced substantially non-defense users must tighten belts further. Fabricators with high-rated work are pushing for deliveries in some cases, asking deferrals in scattered instances. Plate fabricators without much government business are working only token schedules, have badly distorted supplies and can see little hope for relief in the near future.

Pittsburgh—Extremely heavy demand from civilian fabricators for plates while the military takes the biggest share of output is expected to continue. It will not be easy to place new orders for first quarter tonnage.

Cleveland — Strong demand for plates continues and there is slight chance for any noticeable easing in supply until first quarter next year at earliest. This is especially true of the heavy plates. Openings in rolling schedules between now and end of the year will be quickly filled. A local buyer recently was unsuccessful in efforts to obtain tonnage from an eastern mill. Strike at the Lorain, O., yard of the American Ship Building Co., idling 1400 workers and halting work on two new lake freighters, is not expected to result in any holdup in steel shipments to the plant unless the tieup is prolonged. This yard has an extensive program of winter ship repairs coming up.

Seattle—No major plate tonnage awards are pending. Shops report

good demand for small tanks. Backlogs are fair. Deliveries are badly off schedule.

Tubular Goods . . .

Tubular Goods Prices, Page 221

Boston—Buttweld pipe is easier. More fourth quarter tonnage will be available than expected. October quotas to distributors have been scheduled, but in one case August and September tonnages were eliminated. Jobbers are taking full allotments of buttweld. Still tight is electric welded, especially 4-in and over.

Philadelphia—The pipe mill at Claymont, Del., is expected to go down this week. Openhearths at that point, in the meantime, will build up a wide range of quality ingots.

San Francisco—Oil well casing and drill pipe are scarce. Some operators are buying odds and ends, having it threaded in one place and fitted in another.

Seattle—Cast iron pipe prices have been advanced $5 per ton, and on fittings $10 per ton. Demand is slow. Many buyers are postponing orders.

Structural Shapes . . .

Structural Shape Prices, Page 217

Pittsburgh—Demand for structural shapes is expected to be strong through first half of next year. Customers are anxious to place orders for first quarter tonnage, but third and fourth quarter carryovers will extend through January at least.

Boston—Fabricating shops have sold out fourth quarter allocations in many cases, tonnage to be rolled in January-February. Considerable tonnage of plain material remains unplaced. Most mills are nearly two months behind original delivery schedules except for bridge needs.

Philadelphia—Apartment building and commercial construction may revive with suspension of credit controls by the Federal Reserve Board. Builders will have an easier time getting second mortgages. Of course, material restrictions hold down commercial work but the door is open to easier financing. Some fabricators are six to seven months behind on deliveries of fabricated steel.

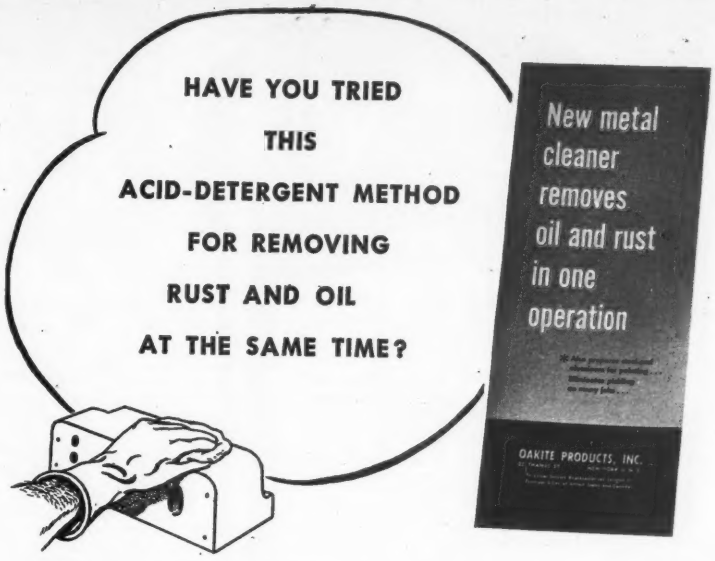
Seattle—About 1000 tons of structurals for three Washington and Oregon state bridges will be up for bids late this month.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 221

Philadelphia—John L. Lewis is proving to be the best salesman of all for the foundry coke people. Brisk tonnage movement is reported as buyers seek to build inventories against a possible early strike at the coal mines.

Pittsburgh—With a coal strike threatened some coke users are beginning to worry. They are shopping for supplies to protect themselves should a strike come. The greater number, however, exhibit no great concern because inventories are high and there is still the possibility a strike will be averted.



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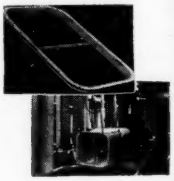

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Scrap . . .

Scrap Prices, Page 224

New York — Open-hearth grades are at ceiling prices, including the various turnings classifications. Yards are paying top prices. Shipments are steady, though not heavy, but some improvement in buying is expected before winter. Cast grades are moving slowly, quoted $2 to $3 under ceilings, an exception being No. 1 machinery cast which is at ceiling in some transactions.

Boston — Demand for cast scrap lags with prices under ceilings on most grades. Steel scrap, except for turnings, is at ceilings. Mills are holding firmly to specifications. Shipments are retarded by limited movement of steel to yards. Yard bids for unprepared steel scrap are in the $27 to $28 range.

Buffalo—Easier tone prevails in the scrap market. Weakness rules cast scrap with prices dipping $2 to $3 from ceiling. Steelmaking grades are holding at top prices. Dealers report new business in steel grades.

Philadelphia—Price breaks of $2 per ton are reported in mixed borings and turnings, machine shop and short shoveling turnings. Heavy breakable and machinery cast are quoted $45 and $52, respectively, delivered. No. 1 cupola cast and unstripped motor blocks are unchanged but wobbly on a delivered basis. The mills have substantial supplies of steelmaking scrap, about 45 to 60 days stocks.

Pittsburgh—No great activity is evident in the scrap market here but there is no sign of any weakening. Mill inventories are estimated at about 90 days and in some cases are increasing.

Cleveland—Steelmaking grades of scrap are moving at ceiling though the mills are becoming noticeably selective with their stocks averaging around 45 days' supply. With cold weather on the way, when scrap collection and preparation are restricted, dealers anticipate no easing in the market over coming months. Currently, more production scrap is coming onto the market but volume is not up to expectations. High-level steelmaking operations appear assured into next spring providing the scrap market strong underlying support. Good grade cast scrap is moving to the foundries at ceiling despite the fact some of the casting shops are still operating on curtailed schedules.

Detroit—Softness in cast scrap and blast furnace grades has not gone beyond being a market undertone. Blast furnace material is moving at ceilings, the market getting support from a large buy in Ohio at ceiling with unlimted springboard.

Birmingham—Continued firmness is apparent in the district scrap market with blast furnace grades at ceiling and cupola cast quoted at $46 to $47 and stove plate at $42 to $43.

Los Angeles — Mills are buying scrap actively but are scrutinizing quality carefully. Steelmaking scrap is showing a softer undertone. No. 2 heavy melting is selling for $30 to $34, $3 below ceiling. Firmed by heavier foundry buying No. 1 cupola

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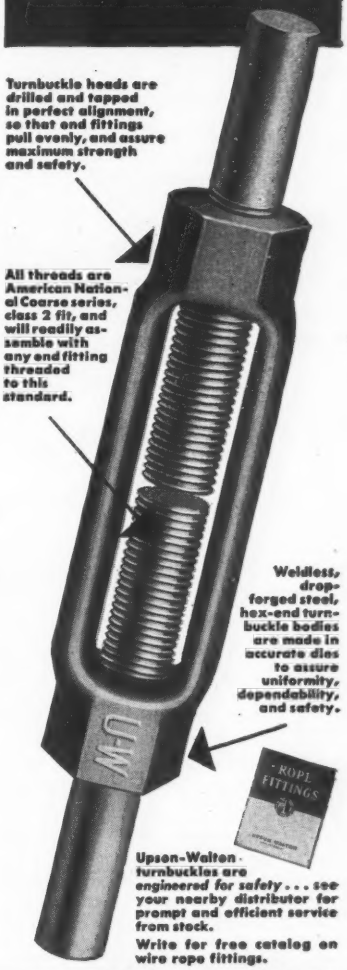
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cast advanced to $49 on the open market.

San Francisco—There is no noticeable decline in scrap shipments. Mills inventory position is comfortable. Machine shop turnings are selling at $17 per ton; No. 2 bundles at $29, and No. 2 heavy melting at $31. All other grades are at ceilings. No. 1 cupola cast is firm at $46.

Seattle—Heavy melting scrap is in limited supply but is sufficient for current mill needs. Ceiling prices are being paid. No. 2 bundles are plentiful at $5 under ceiling. Large buyers will have to extend their buying area.

Pig Iron . . .

Pig Iron Prices, Page 216

Cleveland—While there is no surplus of merchant iron in this area sellers are not under extreme pressure. Foundries, limited to 30 days inventory, are taking in their needs steadily, but some shops, especially those on light castings, are operating on curtailed schedules. Shops on heavy defense work are taking all the iron they can get so that any lag in demand from one consuming direction is offset by the bulge in another. All 10 blast furnaces in this immediate district now are operating.

Detroit — Cautious optimism is starting to permeate the foundry industry here. A large die program of one large body builder is expected to pep up this field the next few months. Domestic supply of pig iron is about matching needs but some local interests will take Canadian iron despite its $70-plus price.

Boston—Foundry melt shows no increase with the advent of fall. As a matter of fact, it has eased slightly with producers of machine tool castings. Jobbing shops average about three days' melt weekly.

New York — Shipments are curtailed somewhat this month due to the 30-day inventory limit, larger consumers being chiefly involved. In scattered cases melters are using more cast scrap.

Buffalo—Local foundries are having difficulty maintaining recent output schedules. Although demand easily absorbs total merchant iron output, many melters are on a curtailed basis. Meanwhile demand for basic iron holds at high level with approximately 80 per cent of current output assigned to open hearths. Approximately 4000 tons of Swedish ore were received last week.

Philadelphia—Pig iron inventories are fair to healthy. No real squeeze is due. Majority of consumers hold supplies of 30 days or better. Foundries, averaging 70 to 75 per cent of capacity operations, acutely feel the pig iron prices increase. Reluctant to raise castings prices for fear of curbing demand they must absorb all retroactive pig iron costs.

Pittsburgh—Demand for pig iron is sluggish. Some inquiries are being received from foundries outside this area. A few heavy jobbing foundries provide a steady demand. Sales are mainly to foundries seeking to re-establish inventories.

Warehouse . . .

Warehouse Prices, Page 223

Chicago — Warehousemen maintain the 15-day freeze of their receipts for military account is unrealistically high. It is estimated the military take from distributors runs to no more than 15 per cent at the outside. Subcontractors take most of this tonnage with demand strong for heavy plates, large bars and special alloy steels. Priority Z-2, for machinery builders, comes up often.

Boston—Distributors are building up sheet inventories slightly. However, plates, shapes and bars move out of warehouses as quickly as received. Straight chromium stainless stocks are heavy. Tool steels, hot-rolled strip and most wire products are plentiful.

New York—Nails and merchant wire products are soft spots in warehouse distribution. The reverse holds for standard carbon products, shapes, plates and bars, demand for which prevents building inventory. Sheet supply is improving slightly.

Philadelphia—Septemoer warehouse business volume will better that of August. Inquiries are up though not as high as some distributors would like them to be. Mostly prompt shipment is sought. Shipments are coming in well from mills. Most products, except bars and plates, are in improved inventory balance.

Cleveland—While order volume this month will show improvement over that of August, some distributors

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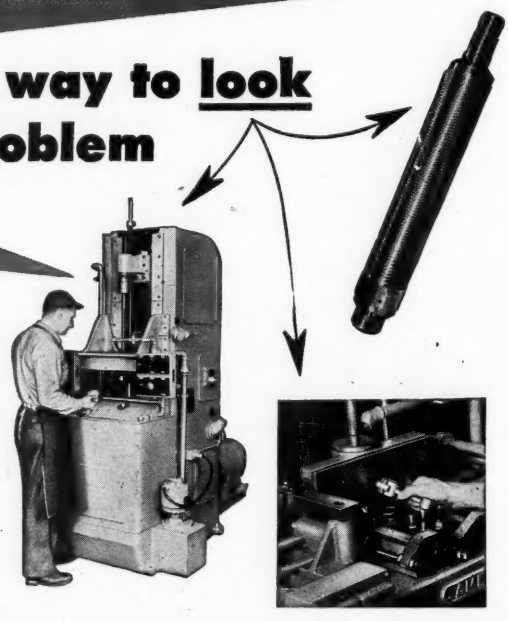

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find the pickup following the summer vacation season and ending of the steel strike disappointing. To some extent business volume is affected by the 15-day freeze on warehouse receipts under government regulations. However, allowing for this, the warehouses are not under as great pressure as was expected.

Iron Ore . . .

Iron Ore Prices, Page 223

Cleveland—Lake Superor iron ore deliveries are being billed customers at the new ceiling prices announced 10 days ago by OPS under regulation 169, retroactive on sales delivered on and after July 26. The new ceilings represent an increase of 75 cents per gross ton over those established in January, 1951 by OPS.

The new ceiling prices per gross ton for standard grades of ore of 51.50 per cent natural iron content, delivered at rail of vessel at lower lake ports, subject to adjustment for transportation charges and taxes thereon since Dec. 1, 1950, follow: Mesabi Range nonbessemer, $9.05; Mesabi Range bessemer, $9.20; Old Range nonbessemer, $9.30; Old Range bessemer, $9.45; high phosphorus, $9.05.

After adjustment for analysis, prices shall be increased or decreased to reflect increases or decreases after Dec. 1, 1950, in established rail freight rates from mine to upper lake ports, in established vessel freight rates from upper to lower lake ports, and in taxes on any such rates.

Prices on ore sold and delivered before July 26 are based on the 1951 price schedule announced by sellers early in December, 1950, these being the maximum ceilings permitted by OPS prior to July 26, this year.

Cleveland-Cliffs Iron Co. reports it has consummated sales on the basis of the new ceiling prices to several steel companies whose purchases account for the greater part of the company's production for this year.

Seattle—Contracts are reported pending for export of 1 million tons of iron ore from Vancouver Island to Japan. Representatives of four Japanese mills plan to ship from the mine of the Quatsino Copper & Gold Mines Ltd., beginning next year.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

800 tons, plant addition, Circleville, O., E. I. DuPont, to Bethlehem Fabricators.

500 tons, (estimated) five spillway tainter gates, Lookout Point dam, Oregon, to Berkeley Steel Construction Co., Berkeley, Calif.; low $275,000, by U. S. Engineer, Portland, Oreg.

100 tons or more, high school, East Hartford, Conn., to Topper & Griggs, Hartford, (Bethlehem Fabricators, Inc., Bethlehem, Pa.); A. F. Peaslee, Inc., Hartford, general contractor, reinforcing to Scherer Steel Co., Hartford, Conn.

STRUCTURAL STEEL PENDING

800 tons, highway bridges, Northhampton county, Pa., bids due Sept. 19. This is in addition to previous tonnage placed.

500 tons, Oregon state truss bridge, Wilsonville, Willamette river; bids to highway board, Portland, Oreg.

300 tons, Oregon state girder bridge, 320-foot, Douglas county; bids to highway board, Portland, Oreg.

125 tons, Edmonds, Wash., ferry terminal; General Construction Co., Seattle, low $230,049 to Port of Edmonds, Wash.

REINFORCING BARS . . .

REINFORCING BARS PLACED

2065 tons, three deck sections, Fitzgerald Expressway, Boston, to Bethlehem Steel Co., Bethlehem, Pa., through V. Barletta Co., Roslindale, Mass., general contractor.

775 tons, underpass structure, West Springfield, Mass., to Northern Steel Inc., Medford, Mass., through Berk-Moore Co. Inc., Boston, general contractor.

500 tons, municipal garage, Federal St., Boston, to Bethlehem Steel Co. through J. C. Maney & Co., Boston, general contractor.

350 tons, apartment house, Ketchikan, Alaska, to Bethlehem Pacific Coast Steel Corp., Seattle.

320 tons, public school, Anchorage, Alaska, to Bethlehem Pacific Coast Steel Corp., Seattle; Warrack Construction Co., general contractor.

230 tons, engine test cell building, Michaud ordnance plant, New Orleans, La., to George H. Fox Co., New Orleans, through R. P. Farnsworth, Baton Rouge, La., general contractor.

225 tons, Elelson field, Alaska, Army quarters and industrial building, Seattle, to Northwest Steel Rolling Mills Inc., Seattle.

210 tons, three state bridges, Tolland-Willington, Conn., to Truscon Steel Co., Boston, through Brunali Construction Co., Southington, Conn., general contractor.

200 tons, building, Firemen's Insurance Co., Providence, R. I., to Bethlehem Steel Co. through Gilbane Building Co., Providence, general contractor.

100 tons, housing and miscellaneous buildings, air bases, Presque Isle and Limestone, Me., to Bancroft & Martin Rolling Mills Co., Portland, Me.

REINFORCING BARS PENDING

1200 tons, Tacoma light department administration building; bids postponed from Sept. 15 to Sept. 29.

100 tons, including miscellaneous steel and piling; St. Mary's river bridge; bids to city manager, Corvallis, Oreg., Sept. 24.

PLATES . . .

PLATES PENDING

150 tons; piling, ferry terminal, Edmonds, Wash.; General Construction Co., Seattle, low general contract, $230,049 to Port of Edmonds, Wash.

PIPE . . .

CAST IRON PIPE PENDING

65,000 tons, cast segments, Port of New York Authority, third lane for Lincoln tunnel; bids opened Sept. 15.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Atlanta & West Point, one 1500-horsepower diesel-electric, to Electro-Motive Division, General Motors Corp., LaGrange, Ill.

Detroit, Toledo & Ironton, seven 1500-horsepower diesel-electric units, to Electro-Motive Division, General Motors Corp., La-Grange, Ill.

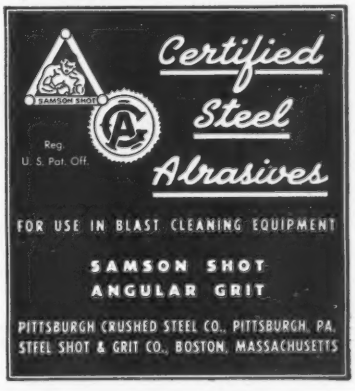
Georgia, two 1500-horsepower diesel-electric units to Electro-Motive Division, General Motors Corp., LaGrange, Ill.

Maine Central, six 1500-horsepower diesel-electric units to Electro-Motive Division, General Motors Corp., LaGrange, Ill., and two 660-horsepower switching units to American Locomotive-General Electric Co.

Minneapolis & St. Louis, two 1500-horsepower diesel-electric units, to Electro-Motive Division, General Motors Corp., LaGrange, Ill.

Western Alabama, one 1500-horsepower general purpose diesel-electric, to Electro-Motive Division, General Motors Corp., LaGrange, Ill.

Western Maryland, 26 diesel-electric units, ten 1600-hp switching units, to American Locomotive-General Electric Companies; two 3-unit 4500-hp, four 2-unit 3000-hp and two 1500-hp units to Electro-Motive Division, General Motors Corp.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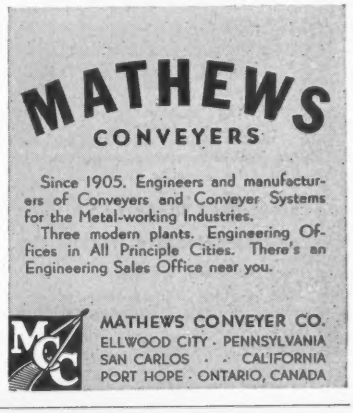
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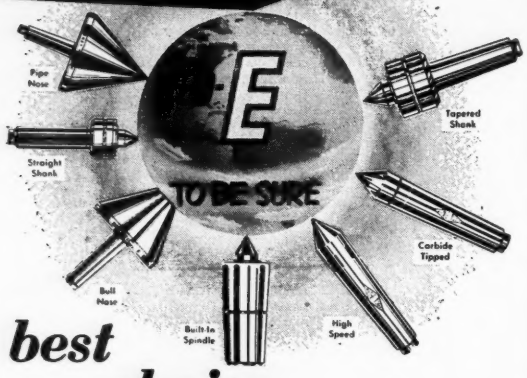

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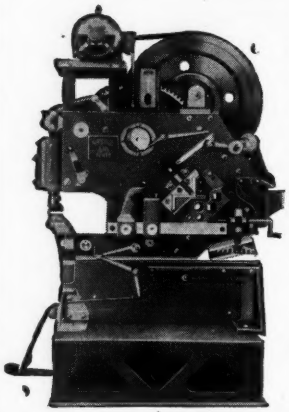

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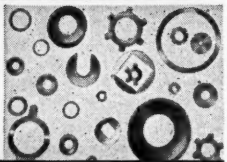

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Here and There in Metalworking . . .

CONSTRUCTION—ENTERPRISE—ORGANIZATIONAL CHANGES

Wilmar Steel Inc. Organized

A steel fabricating plant and offices for Wilmar Steel Inc. will be located in Warren, Ark. The new industry is headed by F. C. Williamson, St. Louis, president; P. E. Marti, St. Louis, vice president; S. M. Dixon, Warren, secretary-treasurer. Long truss spans and other building fabrications will be the primary finished products of the plant.

Plans To Build Chrome Refinery

United States Chrome Corp. is erecting a $1.5 million chrome refining plant six miles north of San Luis Obispo, Calif. The mill is scheduled to be in operation by the year-end. James Hartman is head of the corporation. The product will be shipped to the government stockpile at Grants Pass, Oreg., and to the steel industry in Yokohama, Japan.

ASWA Publishes Roster of Members

The 1952 edition of the roster of members of American Steel Warehouse Association, Cleveland, is available at $1.50 to interested steel consuming firms. The publication contains the names, addresses and telephone numbers of over 700 industrial steel warehouses located in all sections of the country.

Alaska Copper To Build in Seattle

Alaska Copper & Brass Co. plans construction of a shop, warehouse and office at 3209 Sixth Ave. S., Seattle.

Twentieth Century Mfg. Moves

Twentieth Century Mfg. Co. moved into its new plant at Bradley road and Route 176, Libertyville, Ill. The company makes reamers, counterbores, and stop pins.

Will Sell Construction Equipment

Baldwin-Lima-Hamilton Corp., Construction Equipment Division, Lima, O., appointed Bay Cities Equipment Inc., Oakland, Calif., as distributor for its shovels, draglines, cranes, etc.

Smith Widens Grating Distribution

A. O. Smith Corp., Milwaukee, signed four steel warehouses in the A. M. Castle & Co. chain as stocking outlets for its safety grating. The Castle warehouses at San Francisco, Seattle and Los Angeles are functioning as subdistributors for Bufnel Co. Ltd., Smith's safety grating distributor on the West Coast. The fourth A. M. Castle outlet is a stocking distributorship in Kansas City and will operate through A. O. Smith's southwest district office at Houston. In Denver, Eaton Metal Products Co. signed as a stocking distributor for Smith safety grating.

Vancouver Steel Ltd. To Expand

Vancouver Steel Ltd., Vancouver, B. C., plans to build a $4 million electric furnace near the site of an iron ore deposit on Vancouver island. Steel billets from the furnace will be shipped to the company's rolling mill at Burnaby to be converted into bars, rods, shapes, and other steel products.

Magnesium Foundry Opens in Canada

Light Alloys Ltd., a wholly owned subsidiary of Dominion Magnesium Ltd., opens a large magnesium foundry at Haley, Ont., Sept. 15. The government-financed facility was designed and built by Light Alloys largely for the production of jet engine castings and aircraft components.

Stokes Machine Establishes Branch

F. J. Stokes Machine Co., Philadelphia, established a district office at 2904 Woodburn St., Cincinnati, under supervision of M. S. Adler, Cleveland manager for Stokes, and in immediate charge of Theodore G. Debreceni. Stokes manufactures and engineers high vacuum processing equipment, rotary vacuum dryers, vacuum pumps, McLeod gages, tabletting and powder metal presses, and plastic molding presses.

American Can Forms New Division

American Can Co., New York, established a Packing and Materials Handling Division to consolidate the materials handling, packing and shipping functions of the general manufacturing department. S. S. Nicholoson is supervisor of the new division.

Aluminum Door Maker Moves

F. A. Pilgrim Co., aluminum door manufacturer, moved into a $125,000 factory in Youngstown. The new plant has 10,000 square feet of space.

Offers Laboratory Planning Kit

Development engineers of Fisher Scientific Co., Pittsburgh, announce a kit which permits custom installations of entire laboratory rooms without blueprints. The kit contains scaled cut-outs, representing 21 ready-made, pre-engineered steel furniture units. The cut-outs can be

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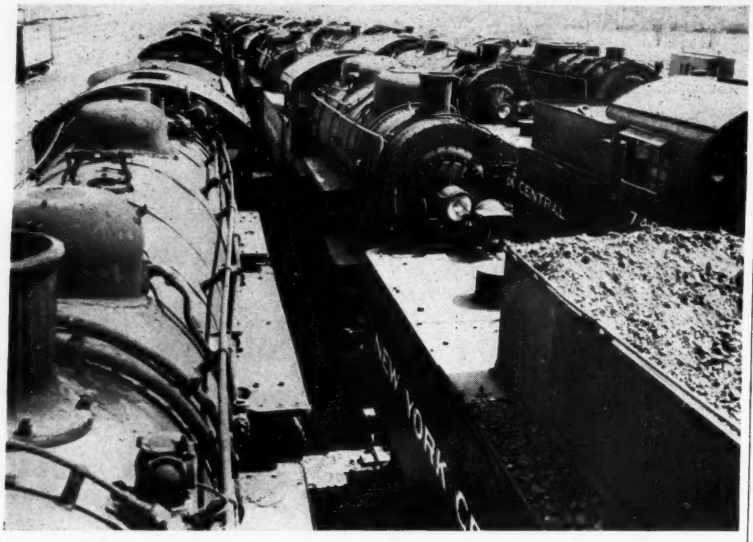

Four Miles of Scrap

If these New York Central Railroad locomotives, about 300 in all, were put in a line, they would equal a four-mile-long train headed straight for the scrap pile. The units, waiting in the Buffalo yards, will provide scrap for about 50,000 tons of finished steel, enough to make more than 15,000 light Army tanks

manipulated on the kit's graph paper. Heights of assemblies can be allowed for just as easily as floor areas by means of the kit's booklet, which gives front and side-view dimensional drawings. Even laboratory utilities can be marked on the plan and ordered as part of the ready-made furniture line.

Mir-O-Col Alloy Co. Builds Foundry

Mir-O-Col Alloy Co. Inc., Los Angeles, expanded facilities for production of precision steel and alloy castings by building an 8000 sq ft foundry and office building. New equipment installed in the foundry includes a 50 kva induction furnace fitted with 100 and 200 lb crucibles, and two gas kilns used to preheat the molds prior to pouring.

Parker Appliance Names Agent

Parker Appliance Co., Cleveland, appointed J. N. Fauver Co., Dayton, O., as distributor for its O-rings. Fauver also is a distributor of Parker industrial tube fittings.

Golde Mfg. Moves To Larger Plant

Golde Mfg. Co. is located in its enlarged quarters at 4888 N. Clark St., Chicago.

GM Expands Diesel Locomotive Plant

General Motors Diesel Ltd., London, Ont., plans an additional expansion program to cost about $2.5 million. It will be the second addition since the plant was opened in August, 1950. Work will get under way at once at the plant which has turned out more than 260 locomotives since it started operations two years ago.

Tin Research Group Changes Name

International Tin Research & Development Council changed its name to International Tin Research Council, The Hague, Holland.

WANTED!

To manufacture and subassemble any unit weighing 1,000 # or under. We have ample facilities for all types of machining and assembly of parts. Ample facilities for castings of bronze aluminum, steel and gray iron for above parts. Send us your inquiries and blueprints for quotation.

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WANTED—DESIGN AND ESTIMATING ENGINEER with industrial furnace experience. Write fully giving experience and salary desired. Drever Company, 736-38 E. Venango Street, Philadelphia 34, Pa.

WANTED: GENERAL SUPERINTENDENT or one who is thoroughly experienced in all phases in manufacturing cold finished bars and now acting in supervisor position either as foreman or assistant to superintendent. Must be able to take full charge of mill operations and understand mill production. Excellent opportunity offered to right party. Plant located in Eastern Seaboard Area. Only those with full knowledge and experience need apply. Replies held absolutely confidential. Write Box 563, STEEL, Penton Bldg., Cleveland 13, Ohio.

Positions Wanted

PRODUCTION AND COST MANAGER Univ. Eng. graduate with 20 years' practical experience. Excellent record securing maximum production at minimum of cost. Experience covers scheduling, material control, incentives, standard cost, job evaluation and budgets. Write Box 560, STEEL, Penton Bldg., Cleveland 13, O.

INDUSTRIAL RELATIONS POSITION DESIRED. College graduate, 33, veteran, 20 months Industrial Relations experience, 4½ years shop experience basis steel. Willing to locate anywhere. Write Box 568, STEEL, Penton Bldg., Cleveland 13, Ohio.

METALLURGIST—AGE 42 21 years' experience in production, rolling and processing of plain carbon steels including plate, sheet, tin-plate, strip and merchant mill products. Experienced also in customer contacts and complaints. 12 years as Chief Metallurgist and Inspector. Location not important. Available immediately. Write Box 564, STEEL, Penton Bldg., Cleveland 13, Ohio.

PLANT MANAGER: M.I.T. GRADUATE WITH 25 years' experience in Plant Management, including Production planning, machine and plant loading, Material and tool control, quality control, purchasing, incentives, standard costs, variable budgets, overhead analysis and break-even charts, job evaluation, supervisory responsibility chart and labor relations. Capable administrator with excellent record. Write Box 559, STEEL, Penton Bldg., Cleveland 13, Ohio.

Accounts Wanted

QUALIFIED MAN NEWLY ENTERING Direct Manufacturers' Agent field in Eastern Michigan and Michigan desires one or two metalworking lines such as screw machine products, hardened & ground, stampings, gears, castings and forgings, or cold heading products. If located or have established business in area, replies should include general location or number of accounts presently served. Address Box 571, STEEL, Penton Bldg., Cleveland 13, O.

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STANDARD GAUGE FREIGHT CARS

Box, Double Sheathed, 40-Ton Capacity
Box, Single Sheathed, 50-Ton
Cabooses, Eight Wheel, Cupola Type
Flats 40- and 50-Ton, Steel Underframe, 40'0"
Gondolas, Composite, 40-Ton Capacity
Gondolas, Composite, or All Steel, 50-Ton and 70-Ton
Hoppers, Covered, All-Steel, 70-Ton
Hoppers, Twin, All-Steel, 50-Ton, Cross Dump
Hoppers, All-Steel, 70-Ton, Cross Dump
Tank, 3,000-Gallon, High Pressure
Tank, 8,000-Gallon, Coiled and Non-Coiled

EXTRA LONG FLAT CARS

40 & 50-Ton Capacity, Length 70' and 74'

HEAVY DUTY FLAT CAR

95-Ton, All-Steel Underframe, Length 30'2"

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Side Dump, 20-Yd., 40-Ton, Lift Door
End Dump, 20-Yd., 50-Ton Drop Door
End Dump, 10-Yd., 30-Ton Lift Door

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3/16"	Diameter	Weight	500 lbs.
5/16"	"	"	620 lbs.
1/2"	"	"	500 lbs.
5/8"	"	"	228 lbs.
9/16"	"	"	517 lbs.
11/16"	"	"	231 lbs.
3/4"	"	"	1,000 lbs.
13/16"	"	"	978 lbs.
15/16"	"	"	23 lbs.
7/8"	"	"	25 lbs.
1"	"	"	12,000 lbs.
1-1/8"	"	"	944 lbs.
1-3/16"	"	"	210 lbs.
1-5/16"	"	"	4,403 lbs.
1-3/8"	"	"	2,984 lbs.

TYPE 303

1-3/4"	Diameter	Weight	2,157 lbs.
1-15/16"	"	"	2,400 lbs.
3"	"	"	219 lbs.

TYPE 304

1/2"	Diameter	Weight	500 lbs.
1-5/16"	"	"	1,000 lbs.
3"	"	"	200 lbs.
3-1/4"	"	"	620 lbs.

TYPE 309

5/16"	Diameter	Weight	600 lbs.

TYPE 321

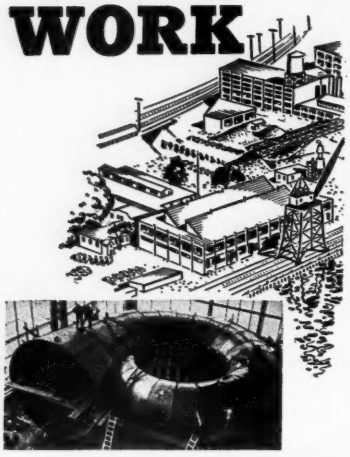
1"	Diameter	Weight	10,000 lbs.

TYPE 347

3/4"	Diameter	Weight	1,002 lbs.
1-3/16	"	"	200 lbs.
1-21/64"	"	"	1,210 lbs.

JANDRU STEEL CORP.
131 Bruckner Blvd. PHONE: CY. 2-5617 New York 54, N. Y.

STEEL PLATE WORK



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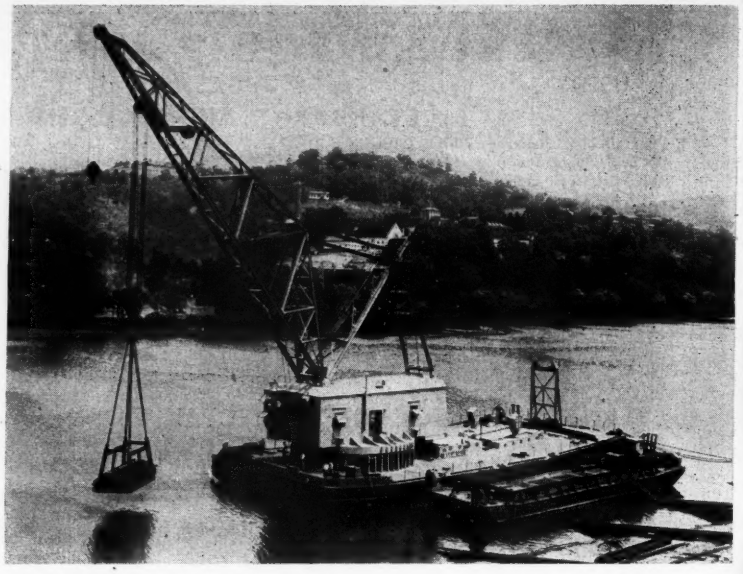

Navy Gives Army a Lift

Dravo Corp., Pittsburgh, is building seven of these 100-ton cranes and 23 others which weigh in at 60 tons each for the Navy's Bureau of Yards & Docks. Overloads of as much as 25 tons were lifted by the larger units in tests. The 100-ton cranes, which will become a part of the Army Transportation Corps, are built on all-welded steel hulls 140 feet by 70 feet. Diesel-electric generators are used

Precision Castings Buys Firm

Precision Castings Co. Inc., Fayetteville, N. Y., acquired Bradley-Edlund Corp., Cortland, N. Y. Emery A. Dunning will continue as vice president and general manager of the Cortland plant. Bradley-Edlund manufacturers forging hammers, drilling and tapping machines, and other types of special purpose machinery at its plant in Cortland. It also owns a plant in Syracuse which is now leased to Precision and is presently used for production of die castings, assembly of ordnance fuzes for the Army, production of infantry mortar tail fins and plating in silver and other precious metals.

Allis-Chalmers Appoints Agent

Allis-Chalmers Mfg. Co., Milwaukee, appointed Ben Beverly Equipment Co., Long Island City, N. Y., as a distributor for its pumps.

Nicholson Expands Machine Works

W. H. Nicholson & Co., Wilkes-Barre, Pa., is installing an addition to its machine works.

Paint Roller Manufacturer Moves

E Z Paintr moved its paint roller manufacturing facilities to St. Francis, Wis. The plant houses under one roof operations previously conducted in several adjacent buildings in Butler, Wis. The plant also houses the executive offices of Black Panther Tool Corp., an E Z Paintr subsidiary. Robert L. Touchett is vice president in charge of production.

Purdy Co. Buys Madison Scrap Yard

Purdy Co., St. Louis, purchased Hickman, Williams & Co.'s Madison, Ill., scrap yard. C. F. Harding, formerly in charge of Hickman, Williams & Co.'s scrap department, is now associated with Purdy in the latter's St. Louis office.

Yale & Towne Separates Sales Units

Yale & Towne Mfg. Co., New York, established separate sales departments for its mechanically and hand-operated truck product lines. John I. Somers and T. F. Moriarty were appointed sales managers of the respective departments.

Life Time Products Corp. To Expand

Life Time Products Corp., Los Angeles, awarded a contract for a $100,000 addition to its plant in Canfield, O. The firm makes enameled strip steel.

Construction Loans Negotiated

International Bank for Reconstruction & Development, Washington, loaned $854,000 to Iceland to help finance construction of a nitrogen fertilizer plant. A loan of $25 million was made to Colombia to help build a railroad in the Magdalena river valley and railroad repair shops in Bogota.

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delicious food...
quiet, sleep-inviting rooms...
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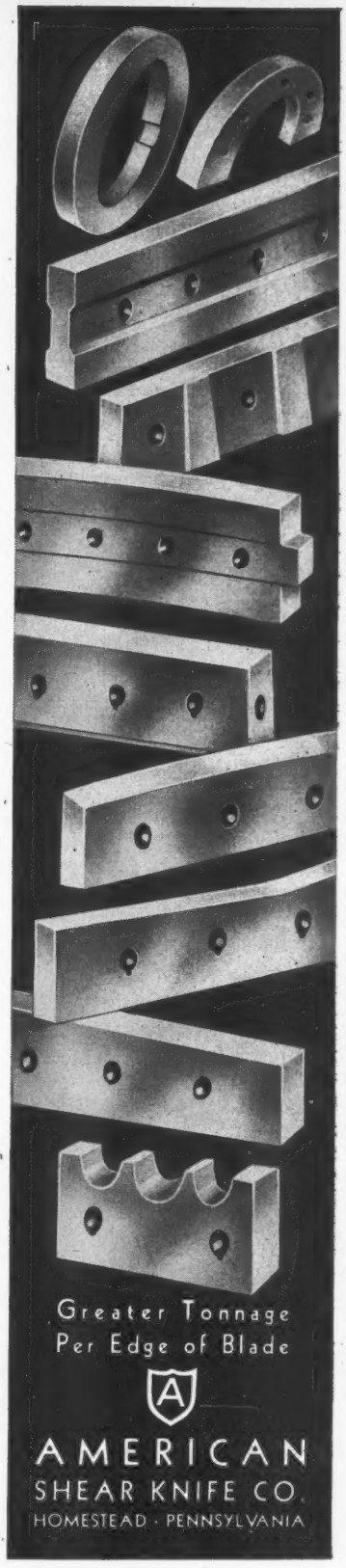

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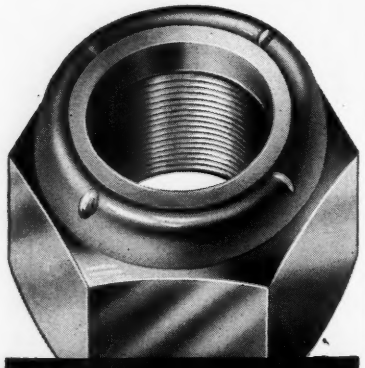

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